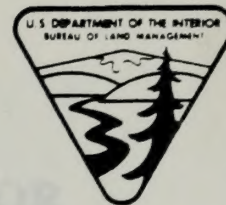




# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
CALIFORNIA DESERT DISTRICT OFFICE  
1695 SPRUCE STREET  
RIVERSIDE, CALIFORNIA 92507-2497



IN REPLY REFER TO

August 28, 1990

Dear Reviewer:

The final report evaluating the potential environmental consequences of the proposed Castle Mountain Project has been completed and is attached for your review. This Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) is an extension of the Draft EIS/EIR and Supplement that were previously distributed and should be used in conjunction with, rather than in place of, those documents.

The proposed Castle Mountain Project would be operated as an open pit heap leach gold mine in the Hart Mining District of the Castle Mountains located in northeastern San Bernardino County, near the Nevada border. The project site is comprised of public lands administered by the Bureau of Land Management and private lands under the jurisdiction of the County of San Bernardino.

The Final EIS/EIR will be used together with economic, social and technical information by the Bureau and County to independently decide on the discretionary actions being requested. The Bureau will prepare a Record of Decision that will be available in early October, 1990. The County will make a decision following a public hearing to be scheduled in September, 1990. A County master summary and addendum concerning the County's independent conclusions on the significance of impacts will be available prior to the public hearing.

Further information regarding the dates and times of these activities may be obtained by contacting:

U.S.D.I. Bureau of Land Management  
Needles Resource Area  
Post Office Box 888  
Needles, California 92363  
(619) 326-3896  
Attention: Elena Daly

County of San Bernardino  
Planning Department  
358 North Arrowhead Avenue, 3rd Floor  
San Bernardino, California 92415  
(714) 387-4155  
Attention: Randy Scott

Comments on the environmental documents or the project will be accepted by the Bureau through October 9, 1990. Testimony with regard to the project may be submitted to the County in writing prior to the County public hearing, or orally during the public hearing.

We appreciate your interest and your commitment to participating in this review process.

Sincerely,

Gerald E. Hillier  
District Manager  
U.S.D.I. Bureau of Land Management

Sharon Hightower  
Director of Planning  
County of San Bernardino



FOX RIVER FORD  
BOSTON



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**U. S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

**CASTLE MOUNTAIN PROJECT FINAL EIS/EIR**

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P. O. BOX 25047  
DENVER, CO 80225-0047**

Ed Hastey  
Ed Hastey  
State Director

8/17/90  
Date



U. S. DEPARTMENT OF THE INTERIOR  
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*[Signature]*  
Special Agent in Charge



# CASTLE MOUNTAIN PROJECT

## SAN BERNARDINO COUNTY, CALIFORNIA

### FINAL EIS/EIR

### MASTER SUMMARY AND RESPONSE TO COMMENTS

Environmental Impact Statement No. 890053  
State Clearinghouse No. 88062708

The final report on the proposed Castle Mountain Project open pit heap leach gold mine has been completed and is attached for your information. The report includes comments and recommendations received on the Draft EIS/EIR and Supplement, a list of commenting public agencies, organizations, and individuals, responses to these comments, and other information.

The Final EIS/EIR consists of the enclosed report together with Draft EIS/EIR and its appendices, and the Supplement, which are incorporated by reference, in accordance with 40 CFR 1503.4, and 14 CCR § 15132. These documents and other information on the project are on file and available for public review at the County and BLM offices listed below, and at additional locations as listed in the User's Guide of this document.

#### Actions Required:

Bureau of Land Management: Plan of Operations  
County of San Bernardino: Site Approval and Mining Reclamation Plan Review

U.S.D.I. Bureau of Land Management  
Needles Resources Area  
101 West Spike's Road/P.O. Box 888  
Needles, California 92363  
(619) 326-3896  
Attention: Elena Daly

County of San Bernardino  
Environmental Public Works Agency  
385 No. Arrowhead Avenue, Third Floor  
San Bernardino, California 92415  
(714) 387-4155  
Attention: Randy Scott

#### Applicant:

Viceroy Gold Corporation  
9457 South Las Vegas Boulevard  
Las Vegas, Nevada 89123

#### Prepared by:

Environmental Solutions, Inc.  
21 Technology Drive  
Irvine, California 92718

This document has been prepared by Environmental Solutions, Inc., an independent consulting firm, under the direction of the U.S. Bureau of Land Management and the County of San Bernardino. A disclosure statement indicating that Environmental Solutions, Inc. has no financial or other interest in the Castle Mountain Project has been filed with BLM in accordance with Federal regulation 40 CFR 1506.5(c).







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A.2.3 Newspaper Publications

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#### APPENDIX C: DRAFT EIS/EIR COMMENT LETTERS

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**USER'S GUIDE**





## USER'S GUIDE

### U.1 INTRODUCTION

1. This Final Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR) has been prepared to describe the disposition of environmental issues raised in the comments received on the Castle Mountain Project Draft EIS/EIR and Supplement. The evaluation and response to public comments is an essential part of the full disclosure environmental review process for both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) and has been completed in accordance with 42 U.S.C. §4321 *et seq.* and Cal. Pub. Res. Code §21000 *et seq.* This Final EIS/EIR for the Castle Mountain Project has been prepared in an abbreviated format in accordance with CEQ Regulations (40 CFR 1503.4(c)). This document should be used in conjunction with, rather than in place of, the Draft EIS/EIR and Supplement. This Final EIS/EIR information, together with the Draft EIS/EIR and the Supplement, fulfills Federal NEPA requirements and State and County of San Bernardino (County) CEQA requirements for a complete Final EIS/EIR.
2. The EIS/EIR is designed to inform the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The Final EIS/EIR will be used together with economic, social, and technical information to decide on the discretionary entitlements being requested. The Bureau of Land Management (BLM) and County have distributed this Final EIS/EIR to provide an opportunity for agency and public review of the complete Final EIS/EIR before decisions are made.

### U.2 RELEVANT DOCUMENTS

1. The Castle Mountain Project EIS/EIR is comprised of the Draft EIS/EIR, Supplement, and this Final EIS/EIR document. In addition, other documents describing the Proposed Action or background information have been prepared. The purpose/contents of the major reports relevant to the Castle Mountain Project are shown in Table U.1 (Related Documents and Availability). Copies of the documents are on file and available for public review at the indicated locations. In addition, the Draft EIS/EIR, Supplement, and the Final EIS/EIR have





**TABLE U.1**  
**RELATED DOCUMENTS AND AVAILABILITY**

Page 1 of 2

DOCUMENT	PURPOSE/CONTENTS	LOCATION(A)
<u>Proponent Applications</u>		
1. <i>Castle Mountain Project Plan of Operations</i> . Hart Mining District, San Bernardino County, California. Viceroy Gold Corporation, Las Vegas Nevada. March, 1988.	Plan of Operations filed pursuant to 43 CFR 3809 regulations. Describes proposed operation to background of environmental considerations and reclamation.	3
2. <i>Castle Mountain Project, Hart Mining District, San Bernardino County, California Application for Mining Reclamation Plan Review and Site Approval</i> . Viceroy Gold Corporation. May, 1988. Las Vegas, Nevada. <ul style="list-style-type: none"> <li>Item 1, Mining Reclamation Summary Form and Mining Reclamation Plan</li> <li>Items 2, 4, and 5, Site Approval Form, Environmental Assessment Summary, surrounding Property Owners List, Hazardous Waste Site Certification.</li> </ul>	Mine Plan and Reclamation Plan filed pursuant to County Development Code §812.0101 and requirements of the California Surface Mining and Reclamation Act (Cal. Pub. Res. Code §21000 <i>et seq.</i> ). Describes details of proposed operation, mine pit configuration, ore processing, and gold recovery. Draft reclamation plan describes reclamation by phase.	5
3. <i>Castle Mountain Project, San Bernardino County, California. Mine Plan and Reclamation Plan</i> . Viceroy Gold Corporation, Las Vegas Nevada. August, 1990.	Final reclamation plan prepared to address Federal (43 CFR 3809) County (Development Code §812.0101) and SMARA (Cal. Pub. Res. Code §21000 <i>et seq.</i> ) requirements in a single document. Plan describes details of mining and reclamation plans. Incorporates recommendations from environmental review process.	1, 2, 3, 5
4. <i>Castle Mountain Project, San Bernardino County, California, Revised Authority to Construct Permit Application</i> . Science Applications International Corporation, Santa Barbara, California. August, 1989.	Application for air quality Authority to Construct permit. Includes proposed operations emissions inventory. Best Available Control Technology and New Source Review analysis.	7
5. <i>Castle Mountain Project, San Bernardino County, California. Heap Leach Facilities Design Report No. 11503</i> . Steffen Robertson & Kirsten, Lakewood, Colorado. March, 1990.	Application for a waste discharge permit. Includes design drawings and proposed specifications for the construction, installation, operation and decommissioning of leach pads, basins, solution storage tanks, and monitoring systems.	6
<u>EIS/EIR</u>		
6. <i>Castle Mountain Project, San Bernardino County, California. Draft Environmental Impact Statement/ Environmental Impact Report</i> . USDI Bureau of Land Management and County of San Bernardino. February, 1989.	Joint BLM and County environmental analysis prepared in accordance with requirements of NEPA (42 U.S.C. §4321 <i>et seq.</i> ) and CEQA (Cal. Pub. Res. Code §21000 <i>et seq.</i> ). Describes Proposed Action, existing environment and analyzes potential environmental impacts. Mitigation measures are identified for each adverse effect. Evaluates cumulative effects, unavoidable adverse effects, and alternatives.	1, 2, 3, 4, 5

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**TABLE U.1  
RELATED DOCUMENTS AND AVAILABILITY  
(Continued)**

Page 2 of 2

DOCUMENT	PURPOSE/CONTENTS	LOCATION(A)
7. <i>Castle Mountain Project, San Bernardino County, California. Supplement to Draft Environmental Impact Statement/Environmental Impact Report.</i> USDI Bureau of Land Management and County of San Bernardino. January, 1990.	Joint BLM and County environmental analysis prepared in accordance with requirements of NEPA (42 U.S.C. §4321 <i>et seq.</i> ) and CEQA (Cal. Pub. Res. Code §21000 <i>et seq.</i> ). Provides discussion of Federal and State listings of desert tortoise. Describes changes to Proposed Action adopted as a result of public and agency comment on Draft EIS/EIR evaluates potential effects. Presents expanded analysis of alternatives and cumulative effects.	1, 2, 3, 4, 5
8. <i>Castle Mountain Project, San Bernardino County, California Final Environmental Impact Statement/ Environmental Impact Report.</i> USDI Bureau of Land Management and County of San Bernardino. August, 1990.	Joint BLM and County environmental analysis prepared in accordance with requirements of NEPA (42 U.S.C. §4321 <i>et seq.</i> ) and CEQA (Cal. Pub. Res. Code §21000 <i>et seq.</i> ). Displays all public and agency comment on Draft EIS/EIR and Supplement. Presents final adopted mitigation measures and design plans as modified by environmental review process.	1, 2, 3, 4, 5
9. <i>Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring.</i> The Mark Group. August, 1990.	Ground water monitoring plan developed in compliance with Draft EIS/EIR mitigation measures.	1, 2, 3, 5
<b>Technical Reports</b>		
10. <i>Castle Mountain Project: Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring.</i> Environmental Solutions, Inc., Irvine, California. March, 1989.	Technical investigation of proposed project ground water withdrawals, Lanfair Valley and Piute Spring hydrology. Presents ground water drawdown modeling analysis. Results of this investigation were summarized in Draft EIS/EIR.	1, 2, 3, 5
11. <i>Development of a Ground Water Supply for Viceroy Gold Corporation, Castle Mountain Project.</i> The Mark Group. Las Vegas, Nevada. August, 1988.	Background data of exploratory drilling, well logs, well development, aquifer testing, water quality sampling, and Lanfair Valley water budget analysis.	3

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(A) INDEX TO LOCATIONS WHERE DOCUMENTS ARE ON FILE:

1. USDI Bureau of Land Management California State Office, Federal Office Building, 2800 Cottage Way, Room E-2915, Sacramento, California 95825 (916) 978-4735.
2. USDI Bureau of Land Management California Desert District Office, 1695 Spruce Street, Riverside, California 92507, (714) 276-6394.
3. USDI Bureau of Land Management Needles Resource Area Office, 101 West Spike's Road, Needles, California 92363, (619) 326-3896.
4. USDI Bureau of Land Management Las Vegas District Office, 4765 Vegas Drive, Las Vegas, Nevada 89126, (702) 647-5000.
5. County of San Bernardino Environmental Public Works Agency, 385 North Arrowhead Avenue, 3rd Floor, San Bernardino, California 92415 (714) 387-4110.
6. California Regional Water Quality Control Board, Colorado River Basin Region, 73-271 Highway 111, Suite 21, Palm Desert, California 92260, (619) 346-7491.
7. San Bernardino County Air Pollution Control District, 15428 Civic Drive, Suite 200, Victorville, California 92392, (619) 243-8200.





been distributed to many regional and local libraries. Further information regarding the availability of these documents can be obtained by contacting the BLM or County at:

U.S.D.I. Bureau of Land Management  
Needles Resource Area  
101 West Spike's Road/P.O. Box 888  
Needles, California 92363  
(619) 326-3896  
Attention: Elena Daly

County of San Bernardino  
Environmental Public Works Agency  
385 No. Arrowhead Avenue, Third Floor  
San Bernardino, California 92415  
(714) 387-4155  
Attention: Randy Scott

### U.3 FINAL EIS/EIR FORMAT

1. The contents of this Final EIS/EIR document are arranged to provide a clear and accurate public record of the information available in the Draft EIS/EIR and Supplement, public input and other information for final consideration.
2. The contents of each of the environmental documents is briefly described in the Master Summary chapter of this document. The following is intended to provide an overview of the contents of this document as a guide to the information provided. The Final EIS/EIR is organized under the following primary headings:

#### RESPONSE TO COMMENTS

- **Master Summary** - This chapter provides a brief overview of the information available and major conclusions in the text of the entire Final EIS/EIR (consisting of the Draft EIS/EIR, Supplement, and Final EIS/EIR). Changes to the Proposed Action as a result of public review/input are summarized. Potential environmental effects, mitigation measures and unavoidable adverse effects are identified. Each alternative to the Proposed Action is described and the relative environmental effects are compared.
- **1.0 Introduction** - This chapter describes the purpose of the Final EIS/EIR and its role in the decision-making process as a full disclosure document. An explanation of third-party contracting for document preparation is also provided.
- **2.0 Public Review and Consultation Process** - This chapter provides a public record of the document circulation, public hearings, and input process undertaken for this project. An overview of the public input is given. An index lists each commenter and where the original comment letter or transcript is located and the location in the Draft EIS/EIR, Supplement, or Final EIS/EIR where the requested information or a response can be found.

- **3.0 Changes To Draft EIS/EIR and Supplement** - The final conceptual design for the Proposed Action, as modified through the public input process, is shown. Changes and additions to the list of mitigation measures from public input is explained and a list of final mitigation measures is provided. Additional alternative mitigation for mine pit backfilling is evaluated.
- **4.0 Response to Comments** - Responses to public and agency comments on the Draft EIS/EIR and Supplement are provided in four sections:
  - Collective Responses: Discussion on the key issues of public interest is given. Explanation of the analyses completed and mitigation measures adopted for aspects of issues such as reclamation, water resources, wildlife, land use, and socioeconomics is given, as well as a discussion on unnecessary or undue degradation, and administrative considerations such as bonding and compliance monitoring.
  - Responses to Agencies: Detailed responses are provided for each Federal, State, or local agency commenting on the environmental documents.
  - Responses to Organizations: Comments or questions received from organizations, requiring detailed explanation, are provided with responses.
  - Responses to Individuals: Comments or questions received from individuals representative of most public commenters or requiring detailed explanation are provided with responses.
- **5.0 Preparers and Persons Consulted** - This chapter identifies individuals and organizations who contributed to preparation of the Final EIS/EIR.
- **6.0 References and Resources**

## APPENDICES

- **Appendix A:** Record of public notices for the Draft EIS/EIR and Supplement.
- **Appendix B:** A notification list for the Final EIS/EIR.
- **Appendix C:** Copies of comment letters submitted on the Draft EIS/EIR.
- **Appendix D:** Transcripts of the public hearings on the Draft EIS/EIR.
- **Appendix E:** Copies of comment letters submitted on the Supplement.
- **Appendix F:** Considerations used in the Draft EIS/EIR for evaluating the list of special interest species potentially occurring in the area are explained.
- **Appendix G:** Copies of correspondence on consultation with the U. S. Fish and Wildlife Service (FWS) pursuant to Section 7 of the Endangered Species Act (16 U.S.C. §1536).
- **Appendix H:** Copies of correspondence on consultation with the State Historic Preservation Officer pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. §470 *et seq.*).



- **Appendix I:** Correspondence on the economics of mine pit backfilling.
- **Appendix J:** This appendix is reserved for final information to be considered by the County as a result of the public hearing to be held.





## MASTER SUMMARY





## MASTER SUMMARY

### S.1 INTRODUCTION

1. This Final EIS/EIR has been prepared to describe the final disposition of environmental issues raised as a result of public comment and review by other agencies on the Castle Mountain Project Draft EIS/EIR and Supplement. This Final EIS/EIR has been prepared as a final compilation of comments by the public and other agencies, responses to those comments, and other information. This document is therefore an extension of the Draft EIS/EIR and Supplement and should be used in conjunction with, rather than in place of, those documents.
2. This summary is designed to provide an overview of the Proposed Action, its potential environmental effects, changes that have been incorporated in the design as a result of the environmental review process and proposed mitigation measures. The contents of the Draft EIS/EIR, Supplement, and Final EIS/EIR are briefly summarized as follows:
  - **Draft EIS/EIR:** The Draft EIS/EIR includes a comprehensive analysis of potential environmental consequences. This document provides a detailed description of the Proposed Action and analyses of potential environmental effects. The existing environment is described and environmental issues of concern that were identified as a result of a BLM and County public scoping process and the County Initial Study are analyzed. Mitigation measures developed for each identified adverse effect are specified. Alternatives to the Proposed Action are evaluated for feasibility and environmental effect. Potential cumulative effects of the Proposed Action combined with other existing or future activities in the area are evaluated.
  - **Supplement:** The Supplement provided additional opportunity for public comment on the project in the context of changes in regulations and modifications to the Proposed Action. This document was prepared subsequent to changes in Federal and local regulations, especially the listing of the desert tortoise as a threatened species, and changes in the San Bernardino County General Plan. Modifications to the Proposed Action (including a mitigated access route design, modified solution storage concepts, modified electrical power generation, and dust suppression measures) that had been incorporated primarily as a result of public input on the Draft EIS/EIR were described and evaluated for potential changes in environmental impact. In addition, based upon public comment on the Draft EIS/EIR, the Supplement presented an expanded analysis of additional alternatives and cumulative effects. A draft Mitigation Compliance Program was also included.
  - **Final EIS/EIR:** This document displays all of the public and agency comments submitted on both the Draft EIS/EIR and Supplement. Public comment did not result in substantive changes in the analyses or conclusions presented in the previous documents. However, requests for clarification of evaluations and suggestions for some more explicit and alternative mitigation requirements were submitted. The Final EIS/EIR



describes how the environmental documentation will be used in the decision-making process and provides a record of the public review and consultation process undertaken for this project. Final design plans for the Proposed Action resulting from the environmental review process are described and a comprehensive list of final mitigation measures is provided. At the request of some commenters, mine pit backfilling, evaluated and determined not feasible in the Draft EIS/EIR, is offered for final consideration. An extensive section of responses to public comment is provided for purposes of completeness and full disclosure.

3. For a complete understanding of the Proposed Action, its potential effects, mitigation measures and alternatives, the reader is encouraged to review each of the above documents in its entirety. The following sections are provided as an overview of the environmental review process and the major conclusions of the environmental impact analysis.

## S.2 PUBLIC REVIEW INPUT AND PROJECT MODIFICATIONS

### S.2.1 PUBLIC REVIEW AND CONSULTATION

1. The Final EIS/EIR concludes over two years of issues scoping, environmental analysis, public input, and design modifications on the Castle Mountain Project, consisting of:

- **Draft EIS/EIR**

- Notice of Intent/Notice of Preparation (May/June, 1988) - Federal and County notices indicating that an EIS/EIR was to be prepared on the Castle Mountain Project were published requesting public and agency input on the issues to be evaluated.
- Public Scoping Meetings (May, 1988) - Public Scoping meetings were held in Barstow, California and Las Vegas, Nevada to solicit input on the environmental issues to be addressed. Notice of the meetings was provided through direct mailing, and notice to local and regional media sources. Items or environmental issues to be addressed were compiled from both oral and written statements.
- Public Notice and Circulation (March-May, 1989) - Federal and State notices indicating the availability of the Draft EIS/EIR were published. Over 500 copies of the document were distributed for a 60-day review and comment period. About 500 comment letters were received.
- Public Hearings (May, 1989) - Three public hearings were held (in San Bernardino and Barstow, California, and Las Vegas, Nevada) to provide opportunity for oral comment. Notice of the hearings was provided by newspaper publication and direct mailing. Nearly 300 people attended the public hearings.

- **Supplement**

- Public Notice and Circulation (January-March, 1990) - Availability of the Supplement was noticed in both Federal and State publications as well as by newspaper publications and direct mailing. About 500 copies of the Supplement were distributed for a 60-day public review and comment period. About 225 comment letters were received.

- **Final EIS/EIR**

- Public Notice and Circulation (August, 1990) - The availability of the Final EIS/EIR has been provided in both State and Federal publications. Copies of the document have been distributed and are on file for public review.
- Public Hearing (to be scheduled) - San Bernardino County will provide notice and hold a public hearing prior to making a decision on the Conditional Use Permit and Reclamation Plan. The BLM will review any additional public comment and prepare a Record of Decision on the Plan of Operations 30 days following the public notice in the Federal Register.

## S.2.2 PROJECT MODIFICATIONS

1. Design modifications to reduce or avoid the potential environmental effects of the Proposed Action were incorporated throughout the environmental review process - from the initial public scoping to the Final EIS/EIR. Project modifications were identified at each step in the review process and described in the Draft EIS/EIR, Supplement, and Final EIS/EIR. The major operational or design modifications are summarized in the following:

- **Water Use**

- Annual water requirements were reduced over 35 percent through planned operational changes including ore crushing, agglomeration, and use of drip irrigation for process solution distribution.
- A detailed program for ground water monitoring has been developed to ensure that predicted aquifer effects would not be exceeded, and that Piute Spring would not be affected.

- **Solution Storage**

- A system of physical isolation measures would be employed to protect area wildlife from exposure to cyanide processing solutions: solution distribution by drip irrigation, onsite transport of solutions in pipes, and storage of the recirculated process solutions in steel tanks. The emergency overflow basin would be covered with netting designed to prevent access by birds and bats.

- **Access**

- Plans for project access were revised as a result of public and agency input to avoid travel through high density desert tortoise habitat. Alignments of existing access roads would be used to the extent possible to avoid additional impacts to vegetation and wildlife habitat.



- **Reclamation**

- Use of rock staining solutions would be employed to reduce the color contrast commonly associated with newly exposed rock. The upper mine pit walls would be sprayed with the solution as mining progresses to mitigate visual effects.
- An onsite revegetation research program would determine the best and most practical methods to revegetate the site. The program results would be implemented as mining progresses to accelerate the revegetation timeframe.
- The Applicant would reclaim disturbances created by other mining activities. Clay quarries which have high color contrast and attract visual attention would be reclaimed.

### **S.3 ENVIRONMENTAL SETTING**

1. Lanfair Valley lies in the eastern Mojave Desert of California. The valley is similar to other valleys in the eastern Mojave Desert, with alluvial flatlands surrounded by sloping bajadas and mountains. However, Lanfair Valley is elevated above the surrounding Ivanpah, Piute, and Fenner Valleys, and as such receives somewhat greater rainfall. Elevations range from about 3,200 feet at the southeastern limits of the valley to over 7,500 feet in the New York Mountains on the western valley margin. The project site is located at the southern limits of the Castle Mountains in northeastern Lanfair Valley. Elevations at the project site range from about 4,100 to 5,100 feet.
2. Vegetation communities and wildlife species in Lanfair Valley and at the site consist of common or wide-ranging species that are generally found throughout the Mojave Desert. Representative plant communities onsite include blackbush scrub, Joshua tree woodland, and creosote bush scrub. An understory of desert grassland also occurs throughout the floor of Lanfair Valley, covering about 200,000 acres. It is recognized by the BLM as an unusual plant assemblage. Wildlife includes reptiles such as lizards and snakes, various resident and migratory birds, as well as mammals, including coyote, jackrabbit, desert woodrat, and mice. Species of special interest include the ferruginous hawk, Swainson's hawk, and Townsend's big-eared bat. Desert bighorn sheep also occur in mountains surrounding the valley. Due to the area's high elevation, the desert tortoise occurs in limited numbers in northern Lanfair Valley. Large populations do exist in the lower elevations of Ivanpah and Piute Valleys to the west and east.



3. Land use activities in Lanfair Valley and at the project site have historically been linked to mining and grazing. A brief period of farming also occurred. Previous mining is evidenced throughout the valley, but the most extensive past and present activities have been related to the Hart Mining District of the Castle Mountains, where gold and fine kaolin clay are found on and in the vicinity of the project site. Cattle graze Lanfair Valley and adjacent areas on extensive private lands and BLM grazing allotments. The East Mojave National Scenic Area (EMNSA) extends over this region of the Mojave Desert, including Lanfair Valley. There are designated Wilderness Study Areas (WSAs) in the surrounding mountain ranges also. Some of these WSAs are recommended by BLM for inclusion in the wilderness preservation system, to be considered by Congress. Recreational uses are generally passive, such as sightseeing along the Mojave Road or the East Mojave Heritage Trail, rockhounding, hunting, and camping.

## **S.4 PROPOSED ACTION (PREFERRED ALTERNATIVE)**

### **S.4.1 DESCRIPTION**

1. The proposed Castle Mountain Project would operate as an open pit heap leach mine, using established methods common to this industry. The objective of the Proposed Action is to develop a commercial open pit mine using conventional heap leach processing to recover gold in a disseminated orebody. The ore would be processed at a rate of about three million tons per year for approximately 10 years.
2. The proposed project is located in the Hart Mining District of San Bernardino County, about 100 miles east of Barstow, California, and about 70 miles south of Las Vegas, Nevada. Hart is an area of historic gold and clay mining activity on the southwest flank of the Castle Mountains in Lanfair Valley. Much of this region of the Mojave Desert is managed by BLM as part of the California Desert Conservation Area (CDCA) and EMNSA.
3. The project site comprises about 2,735 acres, encompassing approximately 2,620 acres of Federal lands administered by BLM and 115 acres of patented mining claims administered by the County. A map showing the location of proposed project facilities with respect to public

and patented lands is shown in Figure S.1 (Land Ownership and Project Facilities). As shown, the Oro Belle Mine pit and South Clay pit would be located on patented land. The remaining facilities would be located on public land administered by BLM.

4. Major components of the project would include:

- **Mine Pits:** Based on current knowledge of the deposits, the project would excavate two mine pits, known as the Oro Belle and Lesley Ann/Jumbo. The mine pits would cover a total of about 135 acres and have a maximum depth of about 600 feet. About 60 million tons of overburden and 30 million tons of ore would be removed.
- **Overburden Pile and Crusher:** Unmineralized rock would be hauled by truck to the overburden pile. The overburden pile would cover about 300 acres at project completion. Ore would be stockpiled nearby or fed directly to the crusher, where it would be crushed to less than 3/8-inch in size.
- **Heap Leach Pads:** Crushed ore would be transported to heap leach pads on the valley floor via conveyor or haul truck. "Lifts" of ore would be loaded on synthetic liners and leached with a dilute cyanide solution delivered through a drip irrigation system. The heap leach pads would cover about 330 acres at project completion.
- **Solution Storage and Gold Processing Plant:** Process solutions from the heap leach pads would drain into pipes and flow by gravity to a solution storage area. Process solutions would be stored in welded steel tanks. Solution would be processed to recover gold using carbon adsorption and electrowinning methods. The process solution would be recirculated for use at the heap leach pads.

5. Ancillary facilities needed to support the operation would include elements such as an administration building, mine maintenance shop, onsite roads, and water and power supply. In particular, water and power supply would involve:

- **Water Requirements and Supply:** Water would be needed primarily for the heap leach process and for dust control. Average annual water demand is estimated at about 725 acre-feet (about 450 gpm). The water would be supplied from wells developed by the Applicant, the majority of which are located about two miles northwesterly of the site near Hart Mine Road. Water would be stored onsite in two tanks, with capacities of 120,000 gallons and 40,000 gallons, respectively.
- **Power Requirements and Supply:** Power for the project would be needed for a variety of uses. Power requirements are estimated at up to 3,000 kilowatts used principally to operate facilities such as the primary crusher, fine crushing and conveying units, process plant, solution circulation pumps, and ground water well pumps. Power would be provided onsite by propane-fired electrical generators.





## MAJOR FACILITIES SUMMARY

FACILITY	ACREAGE
1. LESLEY ANN/JUMBO PITS	100
2. ORO BELLE PIT	35
3. OVER BURDEN PILE	300
4. HEAP LEACH PADS	330
5. SOIL STORAGE	70
6. ROADS	17
a. HAUL ROADS	
b. ACCESS ROADS	
c. CONVEYORS/HAUL ROADS	
7. SOLUTION STORAGE AREA	10
a. PREGNANT AND INTERMEDIATE	
b. PREGNANT, INTERMEDIATE AND BARREN	
8. CRUSHING AREA	10
a. ADMINISTRATION BUILDING/PARKING	
b. MINING CONTRACTOR'S SHOP	
9. PROCESSING PLANT AREA	5
PROCESS BUILDING, WAREHOUSING	
SUBTOTAL	890
OFFSITE ACCESS	
ACCESS ROUTE IMPROVEMENTS	25
TOTAL	915

## SITE FEATURES

- A. NORTH CLAY PIT
- B. SOUTH CLAY PIT
- C. BIG CHIEF HILL
- D. HART (TOWNSITE)
- E. HART MINE ROAD
- F. DRAINAGE WASH
- G. PROJECT ACCESS ROAD

 PATENTED LAND (115 ACRES)

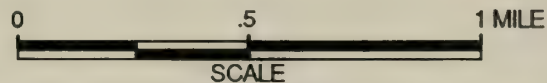


FIGURE S.1

LAND OWNERSHIP AND  
PROJECT FACILITIES

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.



6. Access to the site would be along the Mitigated Access Route, the alignment of which was determined as a result of the environmental review process. About 14.1 miles of existing dirt roads and trails would be upgraded and connected with 4.5 miles of new construction to provide access to the state highway system. The alignment of the access specifically avoids high density desert tortoise habitat.
7. Reclamation is planned to be an active part of ongoing operations. A soil survey has been completed and areas for soil storage identified. A program of onsite revegetation research would be implemented to determine the most suitable methods to be used. Visual color contrasts of newly exposed rock would be reduced by applying rock staining solutions on the upper mine pit walls. Funding for reclamation activities would be guaranteed by bonding. Proposed bonding for initial project activities is estimated to be \$1,017,900, of which \$619,000 would be posted as a joint BLM/County bond, and \$398,900 would be posted with the Colorado River Basin Regional Water Quality Control Board (RWQCB).

#### S.4.2 SUMMARY OF IMPACTS AND MITIGATION MEASURES

1. A broad scope of environmental issues were evaluated to identify the potential environmental impacts and mitigation measures for each effect. Detailed investigations completed for the Draft EIS/EIR addressed key issues such as the potential for ground water withdrawals to affect Piute Spring, methods to prevent exposure of wildlife to cyanide solution, the locations of desert tortoise populations with respect to the site and access road, methods to reclaim the site to reduce visual color contrasts, and revegetation to create habitat useable to wildlife. The relationship of the proposed project to agency management plans and policies as well as other existing land uses was analyzed, and other potential impacts were evaluated for a range of issues including air quality, health and safety, cultural resources, and socioeconomics.
2. The major findings and conclusions from the environmental evaluations of the potential impacts and associated mitigation measures is presented as Table S.1 (Summary of Potential Effects and Mitigation Measures). The table also indicates where each impact could be mitigated below a level of significance and the unavoidable adverse effects. Criteria for determining the significance of an impact were established in the Draft EIS/EIR in accordance with CEQA (Cal. Pub. Res. Code §§21060.5 and 21068). The reader is encouraged to read the text of the Draft EIS/EIR and Supplement for data supporting the conclusions presented in Table S.1.

TABLE S.1  
SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES

Page 1 of 12

POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<u>GEOLOGY</u> 1. Potential ground motion from earthquakes could pose a hazard to project facilities.  2. Loss of potentially economic ore. 3. Potential instability of mine pit walls.  4. Paleontological resources could be lost if woodrat middens of paleontological value exist in area of project facilities.	1.1 Structures and facilities shall meet current applicable seismic safety standards. 1.2 Facilities where potentially hazardous chemicals would be used shall be located in areas not susceptible to encroachment from earthquake-induced landslides. 1.3 Artificial slopes shall be constructed at the natural angle of repose (other than pit walls) and benched as necessary to prevent soil movement. 2.1 Protore shall be separated in overburden pile to the extent practical. 3.1 The orebody consists of consolidated rock. Therefore, slopes in the mine pit are expected to be very stable. 4.1 A qualified paleontologist shall inventory the site for middens prior to surface-disturbing activities. If located, middens shall be assessed for potential scientific value and extracted at the discretion of BLM and County, then stored at an approved repository.	1. None    2. None 3. None 4. None	1. Not significant.   2. Not significant. 3. Not significant. 4. Not significant
<u>WATER RESOURCES</u> 1. Project water consumption would lower local ground water level and affect existing wells or flows at Piute Spring.	1.1 Project water requirements shall be minimized by the following operational procedures: <ul style="list-style-type: none"> <li>• Crushing the ore to reduce leaching time and evaporation loss.</li> <li>• Employing drip irrigation to distribute solution.</li> </ul> 1.2 A ground water monitoring program shall be implemented incorporating the following measures: <ul style="list-style-type: none"> <li>• Two additional ground water monitor wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.</li> <li>• In the event ground water levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the Draft EIS/EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37.</li> <li>• Water levels in monitor wells (W-3, W-19, W-37, W-38, and PS-2) and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water level and stream flows are measured during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Applicant.</li> <li>• In the event ground water levels in monitor well W-37 reach the level predicted by the hydrogeologic modeling completed for the Draft EIS/EIR, the characteristics of the Lanfair Valley aquifer shall be re-evaluated, including a recalibration of the hydrogeologic model.</li> <li>• BLM's decision respecting proposed additional mitigation actions (if any) arising from the evaluation shall be circulated for public review and comment prior to implementation.</li> </ul>	1. Project would use about 450 gpm (725 acre-feet annually) of ground water to supply operational needs.	1. Not significant. Project water use would not affect other existing or potential uses.

## NOTE:

- This table is intended as a summary. For a complete description of mitigation measures, see Final EIS/EIR Table 3.1 (Mitigation Measures).
- This table reflects changes from public input and replaces Draft EIS/EIR Table 1.1.1 (Summary of Potential Effects and Mitigation Measures).





**TABLE S.1**  
**SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES**  
(Continued)

POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<b>WATER RESOURCES - Continued</b>			
2. Soils and ground water could be exposed to toxic materials. Precipitation from storm events on heaps and solution storage facilities could increase quantity of solution.	<ul style="list-style-type: none"> <li>If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Applicant shall reduce its ground water pumping rates in accordance with the provisions of the Ground Water Monitoring Plan. See Section 4.1.5.1 of this Final EIS/EIR.</li> </ul>	2. None	2. Not significant.
	<p>2.1 Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill to effect water quality.</p> <p>2.2 The Applicant shall comply with RWQCB requirements to use materials and implement procedures to safely contain liquids, to achieve the zero discharge system proposed for the project's solution processing system including:</p> <ul style="list-style-type: none"> <li>Impermeable synthetic liners for process solution basins and heap leach pads.</li> <li>Sealed drainage and collection facilities to transport or contain leaching solution.</li> <li>Diked leach pads to confine and control drainage from the leach piles.</li> <li>Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and draindown of solution from the leach pads in the event pumps could not operate because of a power failure.</li> <li>Drainage or diversion ditches outside the heap leach system to preclude entry of storm run-off into the system.</li> <li>A leakage detection monitoring system for the leach pads and basins.</li> <li>Regularly prepared monitoring reports on the current status of operations.</li> <li>Neutralization and final rinsing of the heap leach piles, and removal of solution storage facilities at the time of project completion.</li> </ul> <p>2.3 Reclamation activities shall include control of slopes on cuts and fills, plus revegetation to control surface erosion.</p>		
3. Ground water withdrawal could lower water table such that local wells could go dry.	3.1 If existing wells within 10 miles of the West Well Field go dry as a result of the project, the Applicant shall be responsible for deepening the wells or otherwise provide replacement to the owner of the affected well(s).	3. None	3. Not significant.
4. Natural drainages would be altered.	4.1 The heap leach piles shall be located to avoid disruption of the large drainage that passes through the western portion of the project site. Minor drainage that would be restricted by heap pad construction shall be diverted around the heap piles.	4. None	4. Not significant.
	5.1 Facilities shall be located to avoid disruption to major drainages. Drainage channels shall be constructed to divert minor drainages around heap leach facilities.	5. Minor drainage courses would be realigned.	5. Not significant. DFG will require a stream alteration permit.

## NOTE:

- This table is intended as a summary. For a complete description of mitigation measures, see Final EIS/EIR Table 3.1 (Mitigation Measures).
- This table reflects changes from public input and replaces Draft EIS/EIR Table 1.1.1 (Summary of Potential Effects and Mitigation Measures).





TABLE S.1  
SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES  
(Continued)

Page 3 of 12

POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<p><b>VEGETATION</b></p> <p>1. Onsite and offsite facilities and operations activities would disturb about 915 acres of vegetation in the Joshua tree woodland, blackbush scrub, and creosote bush communities. About 200 acres of desert grassland Unusual Plant Assemblage would be removed. Surface disturbance could provide opportunities for establishment of exotic plant species.</p>	<p>1.1 In order to maximize the success and reduce the time of revegetation, the Applicant shall develop a revegetation research program based upon information provided by qualified experts in desert flora. This research program shall include measures such as:</p> <ul style="list-style-type: none"> <li>• Review of available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.</li> <li>• Development of the methodology for research and a schedule for implementation of the revegetation program for submittal to BLM and the County within the first year of project operation.</li> <li>• Revegetation success shall be determined by measuring the density and diversity of perennial species. The 10-year goal for density, using only perennial species, will be 21 percent as compared to relatively undisturbed control sites. Using a sigmoidal curve, the 5-year goal for density will be six percent of the control. The 10-year goal for diversity will be 15 percent, expressed as a similarity index of the control. The 5-year goal for diversity, based on a sigmoidal curve, will be four percent, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly allocated plots located within areas representative of the reclaimed lands.</li> <li>• Stockpiling of available soil. Redistribution of soils over disturbed areas shall be done following completion of activities on an area. Studies shall be completed to determine where available soil would be most effectively used.</li> <li>• Identification of dominant species to be used in revegetation. Salvaging of individuals of species amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants would be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. A goal would be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.</li> <li>• Selection of a site appropriate for a nursery. Considerations would include water availability, access, and other requirements determined by the revegetation experts.</li> <li>• A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. A goal would be to initiate revegetation procedures within six months following completion of project activities over an area.</li> <li>• Potential invasion of exotic species shall be monitored. If exotic species densities exceed those on non-disturbed areas at the project site, a program of weed control acceptable to the County and BLM shall be implemented.</li> </ul>	<p>1. Project would result in about 915 acres of surface disturbance. Vegetation recovery could require a lengthy period.</p>	<p>1. Not significant. While recovery may be on the order of 30 to 60 years, the vegetation affected is common to the region and comprises less than 0.4 percent of Lanfair Valley.</p>

## NOTE:

- This table is intended as a summary. For a complete description of mitigation measures, see Final EIS/EIR Table 3.1 (Mitigation Measures).
- This table reflects changes from public input and replaces Draft EIS/EIR Table 1.1.1 (Summary of Potential Effects and Mitigation Measures).



TABLE S.1  
SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES  
(Continued)

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POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
VEGETATION - Continued	<ul style="list-style-type: none"> <li>• Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.</li> <li>• Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.</li> <li>• Ground preparation procedures shall include ripping and harrowing of compacted soils. Criteria for slope gradients shall be determined through onsite research on revegetation success.</li> <li>• Implementation of a 5-year monitoring program following project completion to verify revegetation results based upon the goals for species diversity and density.</li> </ul> <p>1.2 Revegetation efforts shall be initiated as soon as possible during the project operation period, as use of specific disturbed areas is completed.</p> <p>1.3 The project revegetation program shall collect data on revegetation and recovery of the desert grassland and provide such data to BLM to supplement UPA monitoring and planning strategies.</p> <p>1.4 Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM.</p> <p>1.5 Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed instead of bulldozed to enhance recovery.</p> <p>1.6 Road Segment A of the Mitigated Access Route shall, to the extent possible, use the existing alignment of the YKL Ranch water pipeline maintenance road for access to State Route 164.</p> <p>1.7 Baseline vegetation measurements shall be completed as part of the revegetation research program prior to surface-disturbing activities.</p> <p>1.8 Fencing shall be used to exclude livestock from revegetation areas until termination of the project and maturation of the revegetated areas, such that grazing can be accommodated. The Applicant shall be responsible for removing fences enclosing these areas at an appropriate time, as determined by the BLM.</p> <p>2.1 Onsite inventories and literature reviews were completed for this document to determine potential occurrence. No plants afforded legal protection are known or expected to occur on the site.</p> <p>2.2 The following measures shall be implemented concerning the <i>Penstemon stephensii</i> population onsite:</p> <ul style="list-style-type: none"> <li>• Flag, fence, sign, and/or otherwise delineate the onsite population to ensure avoidance during project construction and operations. Protect other discovered populations in a similar manner, as appropriate.</li> <li>• Monitor the known population and other individuals/populations that could occur during project operations.</li> </ul>	<p>2. None</p> <p>2. Not significant.</p>	

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**TABLE S.1**  
**SUMMARY OF POTENTIAL EFFECTS AND MITIGATION MEASURES**  
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POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<u>VEGETATION</u> - Continued			
3. Project ground water withdrawal could affect stream flow and riparian vegetation at Piute Spring.	<ul style="list-style-type: none"> <li>If individuals do not appear elsewhere onsite, collect and broadcast seed from the known population to other onsite areas or transplant individuals to another location prior to reclamation of mine exploration drill roads.</li> </ul> <p>3.1 Detailed hydrologic studies and modeling were completed for this document to determine potential impact. Results demonstrated no significant reduction in flow would occur. No significant impact to vegetation is, therefore, expected.</p>	3. No adverse effect.	3. Not significant.
<u>WILDLIFE</u>			
1. Vegetation removal would degrade habitat for wildlife. Site and access roads are included in habitat range of some special interest species, including Bendire's thrasher, desert bighorn sheep, desert tortoise, and various raptors.	<p>1.1 Habitat quality shall be reestablished through revegetation by the reclamation program.</p> <p>1.2 The Applicant shall comply with the recommendations set forth in the FWS Biological Opinion.</p>	1. Project would result in about 915 acres of surface disturbance. Complete habitat recovery could require a lengthy period.	1. Not significant. Affected habitat is common to region and comprises less than 0.4 percent of Lanfair Valley.
2. Construction of mine pits would remove about 60 percent of former mine workings and could affect bats or other species.	<p>2.1 An examination of the shafts and adits shall be completed prior to earth-moving activities in the area in order to estimate the likelihood that they are occupied by bats or other species. The evaluation shall be completed during the winter hibernating period by an ecologist familiar with bat fauna. Should a colony be found, or substantial use by individual bats be indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by a colony would be required for project development, a mitigation program shall be completed.</p> <p>2.2 To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall either be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress.</p>	2. None	2. Not significant.
3. Project activities could affect wildlife onsite or in the project vicinity.	<p>3.1 Applicant shall implement a wildlife education program for construction workers and employees to reduce indirect impacts to wildlife. Personnel shall be acquainted with laws protecting vegetation and wildlife, characteristics of desert wildlife, and proper procedures should wildlife be encountered. The importance of not harassing or otherwise interfering with wildlife, especially the desert tortoise, shall be stressed.</p> <p>3.2 The Applicant shall employ an environmental specialist or contracted consultant to monitor effectiveness of wildlife mitigation measures and the revegetation program. Results shall be reported to the BLM and County at specified intervals.</p> <p>3.3 Wildlife guzzler # B-79 northwest of the project site shall be relocated to an appropriate location determined by BLM.</p>	3. Onsite project activities and offsite traffic could inadvertently result in individual wildlife fatalities.	3. Not significant. FWS has determined that traffic effects would not be likely to jeopardize the continued existence of the tortoise.
4. At lower onsite elevations, impact to desert tortoise habitat and individuals could occur.	<p>4.1 The Applicant shall locate and flag onsite tortoise burrows prior to initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities, relocation of tortoises shall be coordinated with BLM and FWS.</p>	4. Onsite project activities could inadvertently result in individual wildlife fatalities.	4. Not significant. FWS has determined that project surface disturbance would not be likely to jeopardize the continued existence of the tortoise.

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**TABLE S.1**  
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POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<u>WILDLIFE</u> - Continued	<p>4.2 The Applicant shall inform project personnel as to proper methods for handling tortoises and of their protected status.</p> <p>4.3 A project-sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented.</p> <p>4.4 The easterly segment of the Mitigated Access Route shall use an alignment along the western flank of Pute Valley using a segment known as the YKL Ranch Maintenance Road. Access road construction costs shall be the responsibility of the Applicant.</p> <p>4.5 Any tortoise burrows located within the alignment of new road construction shall be flagged and tortoises, if present, removed according to procedures acceptable to BLM and FWS.</p> <p>4.6 Subject to BLM approval of reclamation procedures and public road right-of-way abandonment procedures to be implemented by Clark County, Nevada, the Applicant shall provide barriers to vehicle traffic on County Road A68p to render it impassable for vehicular use. The 9.5 mile road shall be reclaimed as an equestrian trail.</p>		
5. Two wildlife watering guzzlers are located in the vicinity of planned project activities. These activities could deter wildlife from using the facilities.	5.1 Guzzlers impacted by project activities shall be removed and relocated at Applicant's expense, in accordance with BLM guidelines. This would reduce wildlife attraction to project area.	5. None	5. Not significant.
6. Project lighting could attract animals to areas where they could be affected by operations activities.	6.1 Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to reduce fugitive light. The shielded lights shall limit direct lighting to the area of activity.	6. Onsite project activities could inadvertently result in individual wildlife fatalities.	6. Not significant. Some attraction to site may be unavoidable, although operations activities would be expected to deter most animals.
7. Use of explosives and equipment would generate noise. Some animals, such as kangaroo rats and lizards, are rendered temporarily deaf when subjected to excessive noise and become vulnerable to predation. Communication noises (such as courtship and territorial vocalizations by birds) could be interrupted by project noises.	7.1 None available. Topography surrounding mine pits will localize potential effects.	7. Local wildlife could be disrupted by project noise.	7. Not significant. Although unavoidable, most noise would be limited to immediate source area. Effect is expected to be negligible within one mile of source. Impact would not significantly affect wildlife populations.

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POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<b>WILDLIFE - Continued</b> 8. Cyanide solution may attract animals seeking water. Ingestion of cyanide solution or prolonged contact with skin can result in death. Contact by animals where sufficient quantities of solution are available to drink or bathe in could occur at solution ponds or the solution collection and conveyance system.	8.1 Measures to isolate cyanide processing solutions from wildlife have been incorporated in project preliminary design plans. Specific measures to be employed shall be tested for their effectiveness in an ongoing evaluation program after commencement of operations.  8.2 Solution Storage Area: <ul style="list-style-type: none"> <li>Steel tanks have been adopted as the preferred design concept for storage of process solutions. The constructed facility shall:               <ul style="list-style-type: none"> <li>Be designed such that solutions are unavailable to wildlife.</li> <li>Include fencing and netting over the emergency storage basin, designed to preclude access by birds and bats during short-term solution storage.</li> <li>Employ hazing techniques in the event that process solution enters the stormwater storage basin.</li> <li>Provide for replacement of netting over the emergency storage basin if avian entanglement becomes a problem.</li> </ul> </li> </ul> 8.3 Heap Piles <ul style="list-style-type: none"> <li>Fencing - Active heap leach pads shall be surrounded by chain-link fencing.</li> <li>Irrigation - Drip irrigation methods shall be used to distribute solution directly on the heaps, including both the tops and sides.</li> </ul> 8.4 Solution Handling <ul style="list-style-type: none"> <li>The cyanide solution system shall be operated as a closed circuit, with solution transported from heap piles, to storage tanks, to processing plan, and back to the heap piles in a system of pipes, rather than open ditches. Open ditches would be used only to carry heavy storm run-off.</li> </ul> 9.1 Detailed hydrologic studies and modeling were compiled for this document to determine potential impact. Results demonstrated no significant reduction in flow would occur. No significant habitat impact is therefore expected.	8. None	8. Not significant. Measures incorporated in design would essentially eliminate wildlife exposure to processing solution. However, small animals may access points where limited quantities of solution are exposed.
9. Project ground water withdrawal could affect stream flow and habitat at Puute Spring.	10.1 Project waste shall be properly managed and the site monitored to control human garbage that could attract ravens. Garbage shall be kept in containers designed to exclude wildlife.	9. No adverse effect.	9. Not significant.
10. The regional raven population could increase if project garbage presents a new food source. Road kills from traffic could also provide additional food. If an increase in ravens occurred, they could prey on young tortoises. Power line poles could create raven nesting/roosting sites.		10. None	10. Not significant. Project contribution to this secondary cumulative impact would be minimal and limited to operational period.

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POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<u>WILDLIFE</u> - Continued			
11. Traffic on access roads would increase impact to wildlife, particularly desert tortoise populations in Ivanpah and Pute Valleys. Pute Valley is of particular concern because the tortoise population has declined in recent years.	10.2 As part of the onsite biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven population numbers are occurring. 10.3 Applicant shall provide bus/van pooling, to reduce project traffic, and access roads shall be posted for maximum speed limit of 35 mph, to reduce the probability of road kills. 10.4 Power lines poles shall be constructed in a manner that will discourage raven nesting or roosting. 11.1 Applicant shall employ a program of bus/van pooling to reduce potential traffic. Drivers shall be educated about desert road driving, maintaining proper speeds, and the importance of not harassing or otherwise interfering with wildlife, especially the desert tortoise.	11. Offsite traffic could inadvertently result in individual wildlife fatalities.	11. Not significant. Project traffic levels would be low. Traffic would cease following completion of reclamation activities.
12. Domestic dogs and cats could affect local wildlife populations.	12.1 Employees shall not bring domestic cats to the site. Dogs shall be kept on leashes at all times.	12. None	12. Not significant.
13. Improperly constructed barbed wire fencing could entangle bighorn sheep.	13.1 Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement.	13. None	13. Not significant.
14. Power poles could endanger raptors.	14.1 Design and construction of electric power distribution poles shall incorporate provisions for raptor safety.	14. None	14. Not significant.
<u>AIR QUALITY</u>			
1. Fugitive dust from activities could increase PM <sub>10</sub> particulate levels. Total PM <sub>10</sub> from project activities is estimated to be about 64 tons per year.	1.1 Fugitive Dust Emissions Control - A number of measures shall be incorporated into the project design to control the generation of PM <sub>10</sub> particulates. They include: <ul style="list-style-type: none"> <li>• Haul roads within the site boundary shall be surfaced with durable gravel or crushed rock, and shall be well maintained.</li> <li>• Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.</li> <li>• Unauthorized vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.</li> <li>• Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.</li> <li>• During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques.</li> <li>• Manufacturer specifications for all shrouding devices shall be submitted to the SBCAPCD for review prior to use. The debris collecting devices shall have a minimum design efficiency of 90 percent.</li> </ul>	1. Project would result in temporary increase in local air particulate levels.	1. Not significant. Project contribution would not result in a violation of ambient air quality standards.

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POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<b>AIR QUALITY - Continued</b>			
	<ul style="list-style-type: none"> <li>The live storage portion of the coarse ore stockpile shall be covered to minimize wind-blown dust.</li> <li>Blasting during high winds shall be minimized or curtailed to minimize wind-blown dust.</li> <li>The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind/blown dust.</li> <li>Dust suppression for ore processing operations shall be controlled using baghouses constructed to specifications acceptable to the APCD.</li> </ul>		
	<p>1.2 Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring reclamation and revegetation until operations are completed.</p> <p>1.3 As required by the SBCAPCD, PM<sub>10</sub> concentrations shall be monitored at several locations near the project boundaries. The monitoring data shall be routinely submitted to that agency to demonstrate that the project is not causing ambient standards to be exceeded.</p>		
2. Process and fuel emissions could reduce ambient air quality.	<p>2.1 Fuel Use Emissions Control:</p> <ul style="list-style-type: none"> <li>Permanent onsite power shall be generated using propane or natural gas.</li> <li>Emissions from mobile equipment and vehicular engines shall be controlled by:               <ul style="list-style-type: none"> <li>- Using only low sulfur fuels.</li> <li>- Implementing a routine maintenance program to avoid operating inefficiencies.</li> <li>- Reducing vehicular traffic by providing a project-sponsored bus/van pool for the majority of employees.</li> </ul> </li> </ul>	<p>2. Project would result in temporary increase in air emissions.</p>	<p>2. Not significant. Project contribution would not result in a violation of ambient air quality standards.</p>
3. Process solutions would release hydrogen cyanide gas (HCN).	<p>3.1 Hydrogen Cyanide Emissions Control</p> <ul style="list-style-type: none"> <li>Hydrogen cyanide shall be routinely monitored at the processing facilities as a requirement of the employee health and safety plan implemented according to Mine Safety and Health Administration regulations. In addition, the Applicant shall periodically perform airborne HCN surveys to verify that potential public exposure to cyanide is inconsequential.</li> </ul>	<p>3. Process solutions would release HCN.</p>	<p>3. Not significant. Hydrogen cyanide will be below MSHA mandated threshold limits of 10 parts per million.</p>

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POTENTIAL EFFECTS	MITIGATION MEASURES	UNAVOIDABLE ADVERSE IMPACTS	SIGNIFICANCE AFTER MITIGATION
<u>HEALTH AND SAFETY</u>			
1. Explosives would be used to loosen ore.	1.1 Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with Federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting.	1. None	1. Not significant.
2. Employee and public safety concerns include industrial safety and industrial hygiene issues especially for use of potentially hazardous materials.	2.1 Applicant shall develop and employ a spill prevention control and countermeasures plan.	2. None	2. Not significant.
	2.2 Areas where toxic solutions would be used shall have dikes or curbs to contain potential spills.		
	2.3 Training programs, first aid procedures, etc., shall comply with applicable Mine Safety and Health Administration standards to achieve a safe working environment. Rules and regulations of County Department of Environmental Health Services (DEHS) shall be followed to assure that no significant public health hazard would be created.		
	2.4 First aid, fire suppression, and communications equipment shall be maintained onsite. An emergency response vehicle shall be provided onsite.		
3. Potential accidents associated with unauthorized entry into the mining area.	3.1 Fences shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors. Personnel trained in security and first aid shall be onsite on a 24-hour basis.	3. None	3. Not significant.
	3.2 A vehicle shall be provided at all times onsite for emergency response in the event of an accident. First aid equipment shall be provided at appropriate locations. Procedures for emergency response shall be developed in the event of an accident.		
4. Handling and disposal of process and other operations wastes.	4.1 Domestic and industrial wastes shall be managed and disposed of in a manner acceptable to BLM and the County.	4. None	4. Not significant
	4.2 Non-hazardous waste materials generated at the site shall be disposed at approved facilities.		
	4.3 Waste oils shall be recycled. Other hazardous wastes shall be disposed offsite using services and procedures approved by the California Department of Health Services and the U.S. Environmental Protection Agency (EPA).		
5. Transport of reagents and fuels to site could pose a hazard on roads.	5.1 Transport of hazardous materials shall be limited to daylight hours, Monday through Friday.	5. None	5. Not significant.
	5.2 Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials.		
6. Regular traffic on unmaintained or inadequate access roads could be hazardous.	6.1 Applicant shall provide road improvements and implement a regular maintenance program. A maximum speed limit of 35 mph shall be posted.	6. None	6. Not significant.
7. Potential accidents associated with entry into the reclaimed mine site.	7.1 A comprehensive reclamation plan that includes public safety measures shall be implemented.	7. None	7. Not significant.

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<b>VISUAL RESOURCES</b> 1. Operation activities, equipment, and structures would change visual character of site from passive to active.	1.1 Structures shall be painted with colors selected by BLM and the County to blend into surrounding environment. 1.2 Rock staining solution shall be used on the upper mine pit walls to reduce color contrasts. 1.3 Outdoor lighting for mine pits and other nighttime activities shall be shielded to reduce potential effects. 1.4 All operating facilities, including structures, equipment, transmission lines, and fencing, shall be removed at project completion, as required by BLM and by the reclamation plan.	1. Movement of trucks and equipment may attract eye of observers in Lanfair Valley. Activities, structures, and lighting would be visible from locations in Lanfair Valley.	1. Not significant. Effects would be limited to the operational period and would not alter long-term visual quality.
2. Project would modify topography and visual appearance of site. Upper walls of mine pits, overburden, heap piles, and existing clay pits would be visible from locations in Lanfair Valley.	2.1 Overburden and heap leach piles shall be constructed in locations that minimize the degree to which they would be seen from primary roads. Low hills would partially conceal overburden. Heap piles would form low mesas near the valley floor. Overburden shall be placed over clay pits. 2.2 Site reclamation shall include modification of overburden and heap pile shapes to reduce potential impact of straight line geometrics. Revegetation shall be undertaken to assist in reducing color contrasts. Upper mine pit walls shall be stained to reduce color contrasts. Clay pits shall be reclaimed and upper wall of the clay pit on Big Chief Hill stained. 2.3 Revegetation shall include some areas within the project boundary and along access roads that were disturbed by the actions of third parties prior to the time that reclamation of such disturbances was required under FLPMA and SMARA. Clay pits shall be reclaimed using overburden, and rock staining on the upper pit wall of the clay pit on Big Chief Hill. The Applicant shall incorporate reclamation of the adjacent north clay pit, located offsite, into the project reclamation plan. In addition, subject to BLM approval of reclamation procedures and completion of public road abandonment procedures to be implemented by Clark County, Nevada, the Applicant shall reclaim County Road A68p for use as an equestrian trail. The Applicant shall berm and fence both terminus points of County Road A68p to deter vehicular access.	2. Project would modify topography and visual appearance of site. Upper walls of mine pits, overburden, heap piles, and existing clay pits would be visible from locations in Lanfair Valley.	2. Not significant. While landform alterations and some color contrast would be unavoidable, project has been designed for "best practices" in conformance with the EMNSA Plan. Impact would be compatible with existing character (VRM Class III) of southern Castle Mountains. Reclamation of clay pits may result in overall net positive impact.
<b>CULTURAL RESOURCES</b> 1. Project site is located in area known to contain evidence of historic and prehistoric activities. Surface disturbances could destroy these resources.	1.1 Inventories of prehistoric and historic resources have been completed for the project site and surrounding areas. Results have been reviewed by BLM, and proposed data recovery programs have been approved by the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation. 1.2 Pursuant to State and Federal law, recovered resources shall be curated at specific institutions. 1.3 Determination of National Register of Historic Places eligibility and effect to cultural sites has been coordinated with California and Nevada SHPOs. Any additional mitigation required shall be incorporated.	1. None	1. Not significant.

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<u>CULTURAL RESOURCES</u> - Continued	1.4 In addition to the data recovery program, the Applicant has incorporated measures to reduce potential impact to cultural resources in the general vicinity. A chain link fence shall be constructed around the Hart township cemetery and a descriptive sign posted. Employees shall be informed about cultural resources and the need for their preservation. Access roads to areas of high cultural resource sensitivity shall be closed or rerouted, as directed by BLM.		
<u>LAND USE</u>	1.1 Applicant shall construct and maintain fencing to restrict livestock from operational areas. Cattle guards shall be installed at points where fences cross access roads. 1.2 Applicant shall provide alternate water sources if project activities would interfere with existing livestock watering facilities. 1.3 Grazing lessees shall be compensated by Applicant for livestock killed or injured by vehicles driven by project employees. 1.4 Applicant shall remove and dispose of abandoned tank, troughs and corral in Section 23, if so directed by BLM. 1.5 An interpretive site and viewing area shall be provided for recreational visitors to project. The site shall include descriptive information about current mining operations and the history of the Hart Mining District. 1.6 Reclamation plans and procedures shall include provisions to continue existing uses following project completion. Mine pits shall be accessible to operators for additional recovery of low grade ore. Revegetation of grassland would provide for livestock grazing. Casual recreation activities would again be permitted in the project area. 2.1 Access route use shall be limited to operational period. Public use would discontinue following road reclamation.	1. A reduction in about 37 AUMs of livestock forage capacity would occur until vegetation recovery is complete.  2. Public use of area could increase during life of project.	1. Not significant. Unavoidable impact would not significantly reduce livestock production.  2. Not significant. Surface disturbances by casual recreation use would be limited in extent.
<u>SOCIOECONOMICS</u>	1.1 Reviews of regional housing completed for this document determined that adequate housing would be available to meet limited demand created by project employees. No mitigation would be required. 2.1 First aid training shall be provided and appropriate equipment maintained onsite. Procedures for emergency response shall be developed for use in the event of an accident. Personnel trained in security would be on duty 24 hours per day.	1. No adverse effect.  2. None	1. Not significant.  2. Not significant.
<u>INFRASTRUCTURE</u>	1.1 Applicant shall provide upgrading and maintenance of dirt access roads. Utilities for the project shall be self supporting and provided by Applicant.	1. No adverse effect.	1. Not significant.

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3. Mitigation measures designed to avoid, reduce, or reclaim each identified effect were derived from existing regulations, modifying the proposed project design plans and operational procedures, and/or requiring additional mitigative activities. Over 80 mitigation measures have been specified.
4. While not considered significant, there would be unavoidable adverse effects that cannot be mitigated. These include water consumption, vegetation and wildlife habitat disturbance (including loss of grazing forage), generation of combustion emissions and particulates, and visual resource effects such as project lighting, onsite activities during the operational period, and topographic changes.
5. The proposed project was also evaluated for its potential to cause growth-inducing effects. Based upon the estimated project employment of up to 200 persons, and the local limitations upon land development, it was determined that the Proposed Action would not significantly affect regional or local population growth.
6. Construction and operation of the Proposed Action would result in consumption of non-renewable energy resources. The estimated quantities of fuel and oil that would be used by the project were described in the Draft EIS/EIR. Operation of heavy equipment, and machinery for electric power generation is estimated to require about 260,000 gallons of diesel fuel each month and 250,000 gallons of propane (or natural gas) each month. This amount of fuel represents a substantive consumption. The project has been designed for operational efficiency to minimize travel distances and reduce fuel consumption. Proper maintenance of vehicles and equipment would also reduce fuel consumption. In addition, the project-sponsored program of bus/van pooling would reduce gasoline consumption from personal vehicles. The potential for unnecessary, wasteful, or inefficient use of natural resources would therefore be reduced.
7. As a result of public input, additional forms of mitigation have been further analyzed. Methods to fill or partially refill the mine pits with mined rock have been set forth for final consideration. These alternate forms of mitigation include:
  - **Maximum Pit Backfilling:** This would involve filling the project mine pits to approximately the original topography through the central area of each pit, but not the much steeper terrain on the flanks of the pits, following completion of the proposed mining operation. It would extend the life of the project about three years. The primary changes (as compared to the Proposed Action) would be elimination of the overburden pile and reconstruction of most surface topography in the mine pits.



- **Sequential Pit Backfilling:** This would require accelerated mining of the Lesley Ann Pit during the last 12 months of scheduled production from that pit so that overburden material removed from the Oro Belle Pit could be placed directly in the Lesley Ann Pit without intermediate rehandling. Backfilling would therefore occur concurrent with the proposed mining operation. The primary change (as compared to the Proposed Action) would be a nominal reduction in the size of the overburden pile, while filling the Lesley Ann Pit to about 30 percent of its maximum backfill capacity.
- **Scree Slope Backfilling:** Following completion of the proposed mining operation, overburden would be hauled to the rim of the pits and dumped to create scree slopes of loose rock. This activity would extend the life of the project about 1.5 years. The primary change (as compared to the Proposed Action) would be a nominal reduction in the size of the overburden pile and creation of a scree slope to conceal benches on the east wall of the Lesley Ann pit and the walls of the Oro Belle pit from westerly views in Lanfair Valley.

#### S.4.3 CUMULATIVE EFFECTS

1. Cumulative environmental effects are those which result from the incremental impact of a proposed action, when combined with the effects of other past, present, and reasonably foreseeable future actions. In the evaluation of the potential project effects, the cumulative effects of past and present actions were considered. Reasonably foreseeable future actions (including other mines) were also identified and considered for potential combined effects on environmental resources.
2. Because other activities within the cumulative impact study area are generally isolated from each other and from the proposed Castle Mountain Project either by distance or intervening topography, the potential for cumulative impacts is limited. Based upon the evaluation of these considerations and the mitigation measures that would be applied to the proposed project and future projects, no significant cumulative effect on an environmental resource or the continuation of existing land uses is expected.
3. As a result of public comment on the Draft EIS/EIR, additional evaluation of the potential for future mining was provided in the Supplement. An evaluation of the potential effects from future project expansion/modification or project operation beyond 10 years revealed that impacts similar to these described for the Proposed Action would be expected. While such future activities are at this time speculative, if changing economics or new discoveries resulted in future proposals, those activities would be subject to detailed environmental analysis to address individual as well as cumulative effects.



## S.5 ALTERNATIVES

1. A range of alternatives to the Proposed Action have been evaluated. Alternatives were evaluated, in accordance with NEPA and CEQA, to determine if a feasible alternative would reduce one or more potential environmental effects of the project as proposed. Each of the types of alternatives was analyzed for potential feasibility. Evaluation of some alternatives was terminated when it was determined that they were either technically or environmentally infeasible. While the Proposed Action and Ivanpah Access Route Alternative were considered the most technically feasible, other alternatives suggested by commenters were also evaluated and are provided for final consideration. The alternatives investigated are listed below. Those alternatives analyzed in detail for potential environmental effect are indicated in bold:

- **Proposed Action**
- Alternative Mining and Processing Technologies
  - Alternative Mining Techniques
  - Alternative Overburden and Processed Ore Disposal
  - Alternate Gold Extraction Techniques
- Alternative Locations for Project Facilities
  - Mine Pits
  - Overburden Piles
  - Heap Leach Pads
  - Process Facilities and Solutions Ponds
- Alternative Water Supply
- Alternative Power Supply
- **Ivanpah Access Route Alternative**
- Alternative Project Location Considerations
- **Alternative Project Sizes**
  - **Reduced Project**
  - **Enlarged Project**
- **Alternative Project Ore Processing Rates**
  - **Slower Processing**
  - **Faster Processing**
- **No Action Alternative**

2. The alternatives considered in detail were compared to the Proposed Action in terms of the potential unavoidable environmental consequences as summarized in Table S.2 (Proposed Action and Alternatives, Comparative Unavoidable Adverse Impacts). The table compares the unavoidable adverse impacts for each alternative relative to the Proposed Action. The impact to each resource is noted as being "greater," "similar," or "less" than the Proposed Action.

Supporting information is expressed quantitatively where possible or qualitatively, as appropriate. For more detailed information, the reader is referred to the text of the Draft EIS/EIR and Supplement for data supporting these conclusions.

3. A brief description of each alternative is provided in the following.

- **Proposed Action:** The proposed project would operate for about 10 years and process ore at a rate of about three million tons per year. About 890 acres of onsite surface disturbance would occur over the project's life. Access would be provided via the Mitigated Access Route. The Proposed Action has been selected as the BLM preferred alternative.
- **Ivanpah Access Route:** This alternative would have the same basic elements as the Proposed Action. However, instead of constructing the Mitigated Access Route, this alternative would require use of existing public roads through high density Category 1 desert tortoise habitat for site access.
- **Reduced Project:** Total tons of ore and overburden would be decreased by 50 percent. Total surface disturbance would be about 560 acres. The rate of mining and processing would be the same as for the Proposed Action, resulting in a 5-year project life.
- **Enlarged Project:** Total tons of ore and overburden would be increased by 50 percent. Total surface disturbance would be about 1,070 acres. The rate of mining and processing would be the same as for the Proposed Action, resulting in a 15-year project life.
- **Slower Processing:** Total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be decreased by 50 percent, thereby increasing the life of the project to about 20 years.
- **Faster Processing:** Total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be increased by 50 percent, thereby decreasing the life of the project to about seven years.
- **No Action:** The Proposed Action and alternatives would be denied. No environmental impacts or changes would occur.



TABLE S.2  
PROPOSED ACTION AND ALTERNATIVES,  
COMPARATIVE UNAVOIDABLE ADVERSE IMPACTS

RESOURCE CATEGORY	DRAFT EIS/EIR ALTERNATIVES			SUPPLEMENT ALTERNATIVES			
	PROPOSED ACTION	IVANPAH ACCESS ROUTE	NO ACTION ALTERNATIVE	REDUCED PROJECT	ENLARGED PROJECT	SLOWER PROCESSING	FASTER PROCESSING
<b>WATER RESOURCES</b>							
1. Water Use	1. <b>Impact:</b> About 725 acre feet would be consumed annually (7,250 acre-feet for 10-year operation).	1. <b>Similar Impact:</b> About 7,250 acre feet would be consumed for the 10-year operation.	1. <b>No Impact:</b> Well field would not be developed. Existing wells would be abandoned in accordance with County requirements.	1. <b>Less Impact:</b> Total consumption would be reduced to about 3,625 acre-feet for the 5-year operation.	1. <b>Greater Impact:</b> Total consumption would be increased to about 10,875 acre-feet for the 15-year operation.	1. <b>Greater Impact:</b> Although daily water use would decrease to about 250 gpm, the 20-year project life would increase total consumption to about 8,050 acre-feet.	1. <b>Similar Impact:</b> Although daily water use would increase to about 625 gpm for the 7-year project life, total use would be about 6,700 acre feet.
2. Potential Effect to Piute Spring	2. <b>Impact:</b> No impact is expected, based on the detailed analysis of Lanfair Valley aquifer volume, transmissivity, recharge, and distance to Piute Spring.	2. <b>No Impact:</b> Water consumption would be identical to the Proposed Action and is not expected to affect Piute Spring.	2. <b>No Impact:</b> Water consumption would not occur.	2. <b>No Impact:</b> Water consumption less than the Proposed Action would not be expected to affect Piute Spring.	2. <b>No Impact:</b> While the total amount of withdrawal would be 1.5 times greater than the Proposed Action, the impact to the Lanfair Valley aquifer would still be confined to the northeastern portion of the basin. No impact to Piute Spring would be expected.	2. <b>No Impact:</b> While the total amount of withdrawal would be about 1.1 times greater than the Proposed Action, the impact to the Lanfair Valley aquifer would still be confined to the northeastern portion of the basin. No impact to Piute Spring would be expected.	2. <b>No Impact:</b> Total water use would be reduced. As for the Proposed Action, no impact would be expected.
<b>VEGETATION</b>							
1. Vegetation Community Disturbance	1. <b>Impact:</b> About 915 acres of vegetation would be disturbed in the creosote bush scrub/Joshua tree woodland/desert grassland and blackbush scrub communities. Revegetation may take an extended time period for complete recovery.	1. <b>Similar Impact:</b> About 915 acres of vegetation would be disturbed in onsite communities and for access route improvements.	1. <b>No Impact:</b> There would be no disturbances for onsite activities or for access road improvements.	1. <b>Less Impact:</b> The area of onsite and access route vegetation disturbance would be reduced 40% to about 560 acres.	1. <b>Greater Impact:</b> About 1,070 acres of vegetation would be disturbed in onsite communities and for access route improvements (about a 15% increase).	1. <b>Similar Impact:</b> About 915 acres of vegetation would be disturbed in onsite communities and for access improvements.	1. <b>Similar Impact:</b> About 915 acres of vegetation would be disturbed in onsite communities and for access improvements.
<b>WILDLIFE</b>							
1. Habitat Impact	1. <b>Impact:</b> About 915 acres of wildlife habitat would be disturbed. Onsite forage habitats available for use by the desert tortoise and special interest species such as bighorn sheep and raptors would be depleted in areas disturbed. Revegetation may take an extended period of time.	1. <b>Similar Impact:</b> About 915 acres of wildlife habitat would be disturbed.	1. <b>No Impact:</b> There would be no disturbances to wildlife habitat.	1. <b>Less Impact:</b> About 560 acres of wildlife habitat would be disturbed.	1. <b>Greater Impact:</b> About 1,070 acres of wildlife habitat would be disturbed.	1. <b>Similar Impact:</b> About 915 acres of wildlife habitat would be disturbed.	1. <b>Similar Impact:</b> About 915 acres of wildlife habitat would be disturbed.
2. Wildlife Impact	2. <b>Impact:</b> Daily project traffic from operations could affect wildlife. Noise in the vicinity of operations and vehicle traffic on access roads could result in wildlife fatalities for the 10-year life of the project.	2. <b>Similar Impact:</b> Daily traffic levels and noise duration would be the same as for the Proposed Action.	2. <b>No Impact:</b> There would be no traffic or increased noise levels.	2. <b>Less Impact:</b> Daily traffic would be similar, but the duration would be reduced to 5 years. The risk of injury to wildlife would therefore be reduced. Noise duration would be reduced to 5 years.	2. <b>Greater Impact:</b> Daily traffic would be similar, but the duration would be increased to 15 years. The risk of injury to wildlife would therefore be extended by 5 years. Noise duration also would be extended to 15 years.	2. <b>Greater Impact:</b> Daily traffic would be similar, but the duration would be increased to 20 years. The risk of injury to wildlife would therefore be extended. Noise duration also would be increased to 20 years, but daily operating noise would be decreased, since less equipment would be used.	2. <b>Similar Impact:</b> Daily traffic would be similar, but the duration would be reduced to 7 years. The risk of injury to wildlife would therefore be decreased. Noise duration would be reduced to 7 years, but daily operating noise would be increased, since more equipment would be used.
<b>AIR QUALITY</b>							
1. PM <sub>10</sub> Particulates	1. <b>Impact:</b> Up to 427 pounds of particulates would be generated daily during the 10-year operational life of the project.	1. <b>Similar Impact:</b> Up to 427 pounds of particulates would be generated daily for the 10-year operational life.	1. <b>No Impact:</b> There would be no particulate emissions.	1. <b>Less Impact:</b> Up to 427 pounds of particulates would be generated daily, for the 5-year project life.	1. <b>Greater Impact:</b> Up to 427 pounds of particulates would be generated daily for the 15-year project.	1. <b>Greater Impact:</b> Up to 232 pounds of particulates would be generated daily, but over a 20-year period.	1. <b>Greater Impact:</b> Up to 626 pounds of particulates would be generated daily for the 7-year project. PM concentrations could violate CAAQS unless additional mitigation measures were implemented.
2. Process and Fuel Use Emissions (ROC, NO <sub>x</sub> , SO <sub>2</sub> , CO)	2. <b>Impact:</b> Daily combustion emissions would total up to 4,411 pounds during the 10-year operational life of the project.	2. <b>Similar Impact:</b> Up to 4,411 pounds of combustion emissions would be generated daily for the 10-year operational life.	2. <b>No Impact:</b> There would be no combustion emissions from mobile equipment and power generation units.	2. <b>Less Impact:</b> Up to 4,411 pounds of combustion emissions would be generated daily for the 5-year project life.	2. <b>Greater Impact:</b> Up to 4,411 pounds of combustion emissions would be generated daily for the 15-year life of the project.	2. <b>Greater Impact:</b> Up to 2,205 pounds of combustion emissions would be generated daily, but over a 20-year period.	2. <b>Greater Impact:</b> Up to 5,734 pounds of combustion emissions would be generated daily for the 7-year life of the project.
<b>VISUAL RESOURCES</b>							
1. Operational Activities	1. <b>Impact:</b> Project activities and lighting would be visible from unobstructed viewing locations in Lanfair Valley for the 10-year project life.	1. <b>Similar Impact:</b> Project activities and lighting would be visible for the 10-year operational life.	1. <b>No Impact:</b> There would be no project lighting.	1. <b>Less Impact:</b> Project activities and lighting impacts would be reduced to a 5-year operating period.	1. <b>Greater Impact:</b> Project activities and lighting impacts would be increased to a 15-year operating period.	1. <b>Greater Impact:</b> While the amount of equipment and activity onsite would be reduced as a result of a decreased rate of ore processing, the duration of activities would be increased to a 20-year operating period.	1. <b>Similar Impact:</b> The onsite equipment and activities would be increased. However, the duration of activities would be reduced to a 7-year operating period.
2. Site Topographic and Visibility Changes	2. <b>Impact:</b> Landform and color changes would modify the site's visual character. The sizes of the overburden pile and area of heap leach pads are based on processing about 30 million tons of ore.	2. <b>Similar Impact:</b> Processing of about 30 million tons of ore would change the landform and color of the site.	2. <b>No Impact:</b> Beneficial visual impact from project reclamation of clay pit disturbance would not be realized.	2. <b>Less Impact:</b> Ore processed would be reduced to 15 million tons. Two heap leach piles would be eliminated, and the overburden area would be reduced.	2. <b>Greater Impact:</b> Ore processed would be increased to 45 million tons. Heap leach piles and overburden area would be increased.	2. <b>Similar Impact:</b> Ore processing of about 30 million tons of ore would change the landform and color of the site.	2. <b>Similar Impact:</b> Processing of about 30 million tons of ore would change the landform and color of the site.
<b>LAND USE</b>							
1. Livestock Grazing Forage Reduction	1. <b>Impact:</b> The 915 acres of vegetation removed by project activities would reduce livestock forage by about 37 animal unit months (AUMs) in the Lanfair Valley grazing allotment.	1. <b>Similar Impact:</b> The 915 acres of disturbance would reduce available livestock forage by about 37 AUMs.	1. <b>No Impact:</b> Beneficial wildlife habitat impacts from project reclamation of clay pit disturbance would not be realized.	1. <b>Less Impact:</b> The 560 acres of disturbance would reduce available livestock forage by about 19 AUMs.	1. <b>Greater Impact:</b> The 1,070 acres of disturbance would reduce available livestock forage by about 43 AUMs.	1. <b>Similar Impact:</b> The 915 acres of disturbance would reduce available livestock forage by about 37 AUMs.	1. <b>Similar Impact:</b> The 915 acres of disturbance would reduce available livestock forage by about 37 AUMs.

EXPLANATION:

This table compares the anticipated unavoidable adverse impacts of each alternative project to those associated with the Proposed Action. The primary anticipated unavoidable effects of the Proposed Action are summarized for each environmental resource. Anticipated unavoidable effects of the alternatives are then compared to the effects of the Proposed Action as 'greater', 'similar', or 'less' impact. Where no unavoidable adverse environmental effect is expected, 'no impact' is shown. Supporting information is cited quantitatively where possible, or qualitatively, as appropriate.

As discussed in the Draft EIS/EIR (Section 7.0, Unavoidable Adverse Impacts), and based upon the regulatory requirements and mitigation measures that would be incorporated into the project design, most of the identified effects would be mitigable to a level of no significant impact. However, there would be some unavoidable adverse impacts to the resource categories listed above. Five additional resource categories are addressed in the Draft EIS/EIR (Geology, Cultural Resources, Environmental Health and Safety, Socioeconomics and Infrastructure), but are not discussed in this comparison, because they could be mitigated or are considered to be positive.

NOTE:

This table reflects changes from public input and replaces Supplement Table 4.1 (Proposed Action and Alternatives, Comparative Unavoidable Adverse Impacts).





**CHAPTER 1.0**  
**INTRODUCTION**







## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

1. This Final EIS/EIR has been prepared to describe the disposition of environmental issues raised in the comments received on the Castle Mountain Project Draft EIS/EIR and Supplement. The evaluation and response to public comments is an essential part of the full disclosure environmental review process for both the NEPA and the CEQA and has been completed in accordance with 42 U.S.C. §4321 *et seq.* and Cal. Pub. Res. Code §21000 *et seq.*

### **1.2 FINAL EIS/EIR REQUIREMENTS**

1. Federal regulations require that the Final EIS include the draft document, plus responses to comments (40 CFR 1503.4). The response to comments may take the form of a revision to the Draft EIS/EIR or may be a separate section in the final document.
2. The CEQA Guidelines (14 CCR §15132) require that the Final EIR shall consist of:
  - The Draft EIR or a revision of the draft.
  - Comments and recommendations received on the Draft EIR either verbatim or in summary.
  - A list of persons, organizations, and public agencies commenting on the Draft EIR.
  - The responses of the Lead Agency to significant environmental points raised in the review and consultation process.
  - Any other information added by the Lead Agency.
3. This Final EIS/EIR for the Castle Mountain Project has been prepared in an abbreviated format in accordance with CEQ Regulations (40 CFR 1503.4(c)). This document should be used in conjunction with, rather than in place of, the Draft EIS/EIR and Supplement. Therefore, this information, together with the Draft EIS/EIR and the Supplement, fulfills Federal NEPA requirements and State and County CEQA requirements for a complete Final EIS/EIR.

### **1.3 THIRD-PARTY CONTRACTOR**

1. Because of staff constraints, mandatory time limits, and/or lack of available staff expertise on certain issues, most public agencies in California do not directly engage in the preparation of EISs and EIRs. Use of contractors for preparation of an EIS is referred to in Federal



regulations as "third party contracting." These regulations, and the process that was followed for the Castle Mountain Project EIS/EIR, are explained in the following paragraphs:

2. The CFR provides guidance on the subject of EIS preparation by "third party contracting:"

"... any environmental impact statement prepared pursuant to the requirements of NEPA shall be prepared directly (by the lead agency) or by a contractor selected by the lead agency ..." (40 CFR 1506.5(c)).

3. Environmental impact evaluation is, by design, a public process which emphasizes full disclosure. The contractor's role is to assist the agency in document preparation. Neither the contractor nor the environmental document recommend project approval or denial. For an EIS, the CFR specifically requires that:

"If the document is prepared by contract, the responsible Federal official shall furnish guidance and participate in the preparation and shall independently evaluate the statement prior to its approval and take responsibility for its scope and comments" (40 CFR 1506.5(c)).

4. Likewise, a draft EIR may be prepared under contract to the Lead Agency. However, before using a draft prepared by another person, the Lead Agency must still subject the draft to the agency's own review and analysis (14 CCR §15084). The Lead Agency must also certify that the final EIR has been completed in compliance with CEQA and that the decision-making body having final approval authority reviewed and considered the final EIR before approving the project (14 CCR §15090). Lead Agencies are legally responsible for the adequacy of their environmental documents. Therefore, it is in their best interest to maintain the integrity of the environmental review process through the preparation of objectively conceived and written documents. Contractors must also prepare a disclosure statement stating that they have no interest in the outcome of the project (40 CFR Section 1506.5(c)). Such a statement has been referenced on the cover page to the Draft EIS/EIR, Supplement, and this Final EIS/EIR.

#### **1.4 USE OF FINAL EIS/EIR IN THE DECISION-MAKING PROCESS**

1. The EIS/EIR is an informational document designed to inform the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.
2. The Final EIS/EIR will be used together with economic, social, and technical information, to decide on the discretionary entitlements being requested. The BLM and County have



distributed this Final EIS/EIR to provide an opportunity for agency and public review of the complete Final EIS/EIR before decisions are made.

3. Both the BLM and County have authority over certain discretionary actions required for the Castle Mountain Project and have completed the Final EIS/EIR as cooperating Lead Agencies. In addition, numerous other permits and approvals will be required by local, State, and Federal agencies in order to satisfy environmental regulations prior to the rendering of a decision or issuing a permit. The specific decision-making process for the two cooperating Lead Agencies varies. However, the requirements of the environmental process are similar and are briefly summarized in the following paragraphs.

#### 1.4.1 BUREAU OF LAND MANAGEMENT

1. Mining activities on Federal lands are authorized by the General Mining Law of 1872 (30 U.S.C. 22 [1988]). Federal regulations require that mining operations proposed on Federal land be reviewed by BLM. The BLM is required to approve mining operations as long as they will not cause "unnecessary or undue degradation" to the public lands (43 CFR 3809.0-2(a)). The BLM is responsible for regulating the reclamation of mining operations on public lands in accordance with 43 CFR Subpart 3809. Certain mining-related activities, such as water pipelines and power line routes outside the area of operation, require rights-of-way authorizations and must be determined to be in the public interest before they can be approved.
2. As required by Federal regulations (43 CFR 3809.1-4), the Applicant filed a Plan of Operations for the Castle Mountain Project describing the proposed operation (including reclamation) and rights-of-way in April, 1988. Based upon the recommendations from this environmental review process, the Applicant has revised its draft reclamation plan for consideration by the BLM and County (Viceroy, 1990). The Final EIS/EIR reviews the environmental consequences of the proposed activities on the approximately 2,620 acres of Federal land as described in the Plan of Operations. The BLM will use the Final EIS/EIR, along with other information, in its consideration of the proposed Plan of Operations, reclamation plan, and rights-of-way authorizations.



3. At the time of its decision, the BLM will prepare a concise public Record of Decision (ROD) in accordance with the Council on Environmental Quality (CEQ) regulations at 40 CFR 1505.2. The record will:
  - State the decision.
  - Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable.
  - Identify and discuss relevant factors, including economic and technical considerations, agency statutory missions, and considerations of national policy which were balanced by the agency in making its decision.
  - State whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not.
  - Adopt a mitigation monitoring and enforcement program.

The ROD for the Castle Mountain Project will be issued by the BLM California State Director at least 30 days following publication of the Final EIS/EIR Notice of Availability in the Federal Register.

#### 1.4.2 COUNTY OF SAN BERNARDINO

1. Mining activities on private land are regulated by the County in accordance with applicable codes. The County reviews proposed site and reclamation plans prior to considering approval of a project. In addition, the County is responsible for regulating the reclamation of mining operations on private lands, in accordance with the California Surface Mining and Reclamation Act of 1975 (SMARA) (Cal. Pub. Res. Code §2710 *et seq.*).
2. The Applicant filed an Application for Mine Plan and Reclamation Plan Approval and Site Plan Review<sup>(1)</sup> in May, 1988, in accordance with County requirements. The Final EIS/EIR reviews the environmental consequences of the proposed activities on the approximately 115 acres of private land as described in the Application. Based upon the recommendations from this environmental review process, the Applicant has revised its draft reclamation plan for consideration by the BLM and County. The County will use the Final EIS/EIR, along with other information, in its consideration of the site plan and reclamation plan.

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<sup>(1)</sup> The County has recently changed this terminology from "Site Plan Review" to "Conditional Use Permit."

3. Upon review of the Final EIS/EIR, and prior to rendering decisions on the discretionary actions, the County must certify that:
  - The Final EIS/EIR has been completed in compliance with CEQA.
  - The Final EIS/EIR was presented to the decision-making body of the Lead Agency, and the information was reviewed and considered prior to approving the project.
4. Should site plan and reclamation plan approvals be granted by the County, a statement of findings would be made for each significant environmental effect of the Proposed Action, accompanied by a brief explanation of the rationale for each finding. Possible findings are that:
  - Changes or alterations have been required in, or incorporated into, the project to avoid or substantially lessen the significant environmental effect as identified in the Final EIR.
  - Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
  - Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the Final EIS/EIR.

In addition, the County would have to make a statement of overriding considerations if, in choosing to grant the site plan and reclamation plan approvals for the project, it determines that significant environmental impacts remain. The statement of overriding considerations would set forth the specific review of why the benefits of the project outweigh the unavoidable significant environmental impacts. The statement of overriding considerations (if any) and the findings will be issued by the County Planning Commission following its decision at a public hearing.

#### 1.4.3 OTHER AGENCIES

1. Permits and approvals for specific activities that would be associated with the Castle Mountain Project will be required from a number of Federal, State, and local agencies. A list of the primary permits and approvals is provided in the Draft EIS/EIR (Appendix B). Where such permits and approvals are discretionary, each responsible agency must demonstrate that applicable environmental regulations have been satisfied.
2. The Final EIS/EIR will be used by agencies exercising regulatory authority over certain resources (such as the RWQCB) and agencies regulating specific activities (such as the



County Department of Environmental Health Services) in their decisions to grant permits and approvals. The exact procedure followed by each of these regulatory bodies for environmental compliance is usually specific to each agency, but may follow the general format used by BLM if the agency is subject to Federal (NEPA) requirements, or may follow the general format used by the County if the agency is subject to State (CEQA) requirements.

## 1.5 FINAL RECLAMATION PLAN

1. The Applicant filed a draft reclamation plan with the County in May, 1988, describing proposed reclamation procedures to be accomplished in compliance with SMARA (Cal. Pub. Res. Code § 2710 *et seq.*) (Viceroy, 1988b). Proposed reclamation plans were also discussed in the Applicant's Plan of Operations filed with the BLM as required by 43CFR 3809.1-5. (Viceroy, 1988a). The BLM, County, and independent preparers of the Draft EIS/EIR reviewed the Applicant's descriptions of proposed reclamation activities, and recommended additional procedures to be accomplished, such as development of a site specific revegetation research program to determine the best methods to be employed. Those additional recommendations were adopted as part of the reclamation program and a detailed description of the reclamation plan was provided in Draft EIS/EIR Section 3.2.8 (Reclamation).
2. As a result of the circulation of the Draft EIS/EIR, additional specificity was requested primarily for the revegetation goals, length of time for monitoring, and bonding.
3. The Applicant has revised the reclamation plan to incorporate the additional specificity requested. The final plan entitled *Castle Mountain Project Mine Plan and Reclamation Plan* (Viceroy, 1990) has also been formatted to be used by both the BLM and County to avoid duplication of agency effort. The plan is on file and available for public review (see User's Guide for locations) for those readers desiring additional detail on this aspect of the project.
4. While the substance of the reclamation plan was envisioned and summarized in the Draft EIS/EIR to the degree necessary for the environmental analysis, the contents of the final plan are briefly described in the following for purposes of information. The key components of the reclamation plan include:
  - **Educational Program For Heavy Equipment Operators** - Employees operating heavy equipment for the purpose of reclaiming the project site would be required to attend an educational session(s) on land shaping, vegetation and soil salvage, seedbank preparation, soil stockpile preparation, contouring, placement of soil and seedbank



material, the value of an undulating topography, and seeding. The purpose would be to educate heavy equipment operators about state-of-the-art reclamation techniques.

- **Experimental Garden and Nursery** - An experimental garden and nursery be used to evaluate establishment and persistence of seed and nursery stock from both commercial sources, and onsite sources.

As areas of the site are disturbed, small to medium sized shrubs would be salvaged and transplanted in the nursery for future revegetation.

- **Seedbank Establishment, Soil Salvage and Handling** - Seedbank material would be salvaged and tested in the research program for use in revegetation procedures. Soil would be stockpiled and redistributed over disturbed areas.
- **Native Sources of Plant Materials** - A native seed mixture would be used. Seed will be collected both onsite and from local distributors.

A goal of the reclamation plan is to transplant at least 25 percent of the barrel cactus and 25 percent of the Joshua trees from 3 to 10 feet tall. Mojave yucca, buckhorn cholla, beavertail cactus, prickly pear cactus, and other plants will be evaluated in the research program, for transplanting survivability.

- **Land Shaping** - Landforms created by mining will be rounded and contoured to better blend with the natural surface contours.
- **Proper Overburden Handling and Placement** - Since final overburden handling may have a direct effect on revegetation success, special handling techniques would be employed to improve reclamation success while conforming with the natural landscape. Overburden material will be placed to develop an undulating topography. The final overburden pile surface will be scarified or otherwise treated to reduce compaction and to allow roots to penetrate into overburden material.
- **Revegetation Research Program** - A Revegetation Research Program would be conducted by an expert in desert flora (currently the Desert Studies Consortium of the California State University system). This program would provide valuable research information. Documentation of both the successes and failures of the field tests would be made available to government agencies and the general public to assist future revegetation of other sites. Research will be conducted in the following areas:

- Seed source/availability
- Soil development/inoculations
- Transplanting procedures
- Nursery stock weaning
- Transplanting success
- Laboratory tests on seed bank viability
- Fertilizers and soil amendments
- Mulching
- Irrigation
- Herbivore protection
- Heap leach substrate enhancement

- **Monitoring and Maintenance** - Reclamation progress would be monitored by the BLM, State, and County. A monitoring and maintenance program would ensure that appropriate procedures are implemented to protect the environment and reclaim areas disturbed by operations. Vegetation inventories would be performed on undisturbed and reclaimed areas through the life of the mine and for five years beyond.
- **Bonding** - A joint BLM/County bond would be posted to ensure that reclamation activities would be satisfactorily completed. Bonding would be adjusted during the life of the project to reflect planned disturbance or reclamation that has been completed. The BLM/County bond has been initially estimated to be \$619,000.

A separate bond totaling nearly \$399,000 would be posted with the California Regional Water Quality Control Board for operating and decommissioning elements of the project including the heap leach pads, solution storage facilities, process plant and the overburden pile.

- **Revegetation Performance Goals** - Success of the revegetation would be determined by measuring two parameters, density and diversity of perennial species. The parameters would govern bond release based on a specified percentage of recovery. Vegetation recovery would be compared to representative control sites that are relatively undisturbed. Based upon preliminary onsite studies of plant densities and discussions between the Desert Studies Consortium, Applicant, BLM, County, and the State of California Resources Agency, these specific performance goals have been established:
  - Plant density: The 10-year goal for density, using only perennial species, will be 21 percent of the control. Using a sigmoidal curve, the 5-year goal will be six percent of the control.
  - Plant diversity: The 10-year goal for diversity will be 15 percent expressed as a similarity index of control. The 5-year goal for diversity, based on a sigmoidal curve<sup>(1)</sup> will be four percent, expressed as a similarity index of the control.

The diversity and density measurements will be based on randomly allocated plots located within areas representative of the reclaimed lands.

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(1) A similarity index measures the similarity between two stands of vegetation, providing information about the number of species common to both, relative to the total number of species occurring in one stand or the other.

**CHAPTER 2.0**  
**PUBLIC REVIEW AND CONSULTATION PROCESS**







## **2.0 PUBLIC REVIEW AND CONSULTATION PROCESS**

### **2.1 PUBLIC CIRCULATION OF DRAFT EIS/EIR AND SUPPLEMENT**

#### **2.1.1 PURPOSES OF REVIEW**

1. CEQA and NEPA view public participation as an essential part of the environmental impact evaluation process. The BLM and County procedures include provisions for wide public involvement to receive and evaluate public reactions to environmental issues related to the agencies' activities.
2. The purposes of public circulation and review of EISs and EIRs include:
  - Sharing expertise.
  - Disclosing agency analyses.
  - Checking for accuracy.
  - Detecting omissions.
  - Discovering public concerns.
  - Soliciting counter proposals.
3. CEQA explains that the focus of the review should be on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate the significant environmental effects. Reviewers should therefore explain the basis for their comments, and whenever possible should submit data or references in support of their comments (CEQA Guidelines, Section 15204).

#### **2.1.2 PUBLIC REVIEW PERIOD AND NOTIFICATIONS**

1. In accordance with both the specific requirements and the intent of NEPA and CEQA, the environmental review process for the Castle Mountain Project has included substantial opportunities for public and agency review and comment on the environmental evaluations. This extensive public review process is briefly summarized in the following paragraphs.
2. The Draft EIS/EIR circulation included the following:
  - The Draft EIS/EIR was completed in February, 1989 and distributed for a 60-day review and comment period extending from March 15, 1989, to May 15, 1989.
  - Copies of the Draft EIS/EIR were sent directly to responsible, trustee, and other State, Federal, and local agencies expected to have expertise, or interest in the resources which may be affected by the proposed project.

In addition, copies were sent to organizations, businesses, and individuals with special expertise on environmental impacts and/or who had expressed an interest in this particular project, or other activities in the East Mojave Desert. About 500 copies of the Draft EIS/EIR were distributed.

- Availability of the Draft EIS/EIR was noticed in the Federal Register by the Environmental Protection Agency (EPA) on Friday, March 17, 1989. The Notice of Completion was filed with the State of California Clearinghouse on February 27, 1989. Notice was also provided in the following newspapers of local and regional circulation: Los Angeles Times, San Bernardino Sun, Las Vegas Sun, Las Vegas Review Journal, and the Barstow Desert Dispatch.
- A news release was prepared and distributed by the BLM on March 9, 1989, describing the Proposed Action, indicating the availability of the Draft EIS/EIR and the methods by which the public could comment on the document. The news release was distributed to the approximately 570 agencies, organizations, and individuals on the BLM's Desert District mailing list. A list was provided of the 33 local and regional libraries in California and Nevada where the Draft EIS/EIR had been placed on file for public review in addition to its availability at all BLM Resource Area offices. Summaries of the Draft EIS/EIR were provided upon request to the California Desert District office and the Needles Resource Area office.
- Three public hearings were held in southern California and Nevada. The purpose of these hearings was to enable the public to provide oral comments on the adequacy, completeness, or accuracy of the Draft EIS/EIR. The meetings were held at the following times and places:
  - April 18, 1989                      San Bernardino County Government Center  
7:00 p.m.                              First Floor Hearing Room  
   385 North Arrowhead Avenue  
   San Bernardino, California
  - April 19, 1989                      Barstow Station Inn  
7:00 p.m.                              1511 East Main Street  
   Barstow, California
  - April 20, 1989                      Clark County Education Center  
7:00 p.m.                              2832 Flamingo Road  
   Las Vegas, Nevada

Public notice of these meetings was provided in the Draft EIS/EIR, in each of the newspaper publications, and in the BLM news release. Altogether, nearly 300 people attended the public hearings. Public notices and affidavits of publication for the Draft EIS/EIR and Supplement are included in Appendix A of this Final EIS/EIR.

3. The Draft EIS/EIR Supplement circulation included the following:

- The Supplement to the Draft EIS/EIR was completed in January, 1990, and distributed for a 60-day review and comment period extending from January 12, 1990 to March 14, 1990.



- Copies of the Supplement were sent directly to responsible, trustee, and other State, Federal, and local agencies that had been previously sent copies of the Draft EIS/EIR. In addition, copies were sent to persons or agencies that had commented on the Draft EIS/EIR and requested subsequent documentation. About 500 copies of the Supplement were distributed.
  - Availability of the Supplement was noticed in the Federal Register by the EPA on Friday, January 12, 1990. Notice was also provided in the following newspapers of local and regional circulation: Los Angeles Times, San Bernardino Sun, Las Vegas Sun, Las Vegas Review Journal, and the Barstow Desert Dispatch.
  - A BLM news release describing the Supplement and its availability was published on January 12, 1990 and mailed directly to approximately 570 agencies, organizations, and individuals on the BLM's Desert District mailing list.
4. Notice of the availability of this Final EIS/EIR has been provided to agencies, organizations, and the public, who had expressed an interest in the project. A complete notification list is included in Appendix B of this Final EIS/EIR.

#### 2.1.3 ADDITIONAL CONSULTATION WITH ENVIRONMENTAL ORGANIZATIONS AND AGENCIES

1. Several major environmental organizations have had an interest in the Castle Mountain Project since the initial Plan of Operations was filed in June, 1987. As part of the environmental review process, meetings were held with the Sierra Club Legal Defense Fund (SCLDF) (representing the Sierra Club, The Wilderness Society, Natural Resources Defense Council, and Desert Survivors) to discuss the project, its potential impacts, and mitigation measures. The meetings, which were held at BLM and State of California offices in Sacramento, were intended to provide a forum for discussion of differences of opinion between the Applicant and the organizations on potential project impacts. The meetings were facilitated by BLM, and were attended by observing BLM and County staff, the EIS/EIR consultants, and numerous experts for discussion of each environmental issue of concern. In total, four meetings were held for the following purposes:

##### Date

June, 1988

##### Primary Purpose

- Identify environmental concerns of organizations being represented by SCLDF that would be addressed in the Draft EIS/EIR.



- |                |  |
|----------------|--|
| August, 1989   | - Review of the technical hydrogeologic analysis of Lanfair Valley aquifer and Piute Spring prepared for the Draft EIS/EIR.                |
| December, 1989 | - Review potential wildlife impacts and special mitigation measures that were addressed in the Draft EIS/EIR.                              |
| January, 1990  | - Review visual impact analysis. Discuss scope and purpose of revegetation program and other reclamation recommended in the Draft EIS/EIR. |

In addition, representatives of SCLDF were taken on a tour of the project site and access route by the Applicant in March, 1990. The details of the proposed project were discussed and natural onsite revegetation was observed.

2. As a result of these meetings, the Applicant and SCLDF were able to discuss major differences in understanding about the project and the environmental analyses contained in the Draft EIS/EIR and Supplement. Several SCLDF suggestions for refinement of mitigation measures were adopted.
3. Individual meetings were also held with some of the agencies that had expressed an interest in the proposed project. The Applicant and various consultants met with the following agencies to discuss details of the Proposed Action and each agency's concerns:
  - USDI Fish and Wildlife Service (FWS)
  - California Department of Fish and Game (DFG)
  - California Attorney General's Office

## 2.2 PUBLIC INPUT ANALYSIS

1. As a result of the wide distribution of the Draft EIS/EIR and Supplement and the degree of public interest in the project, a substantial number of comments were submitted during the public review periods. Over 500 comment letters were submitted. In addition, 100 commenters presented oral comments at the three public hearings. Written comments (received as letter correspondence) and verbal comments (received at the public hearings) are contained in Appendices C, D, and E of this Final EIS/EIR. The following provides a general discussion on the types of comments received, and the location of responses provided in this document.



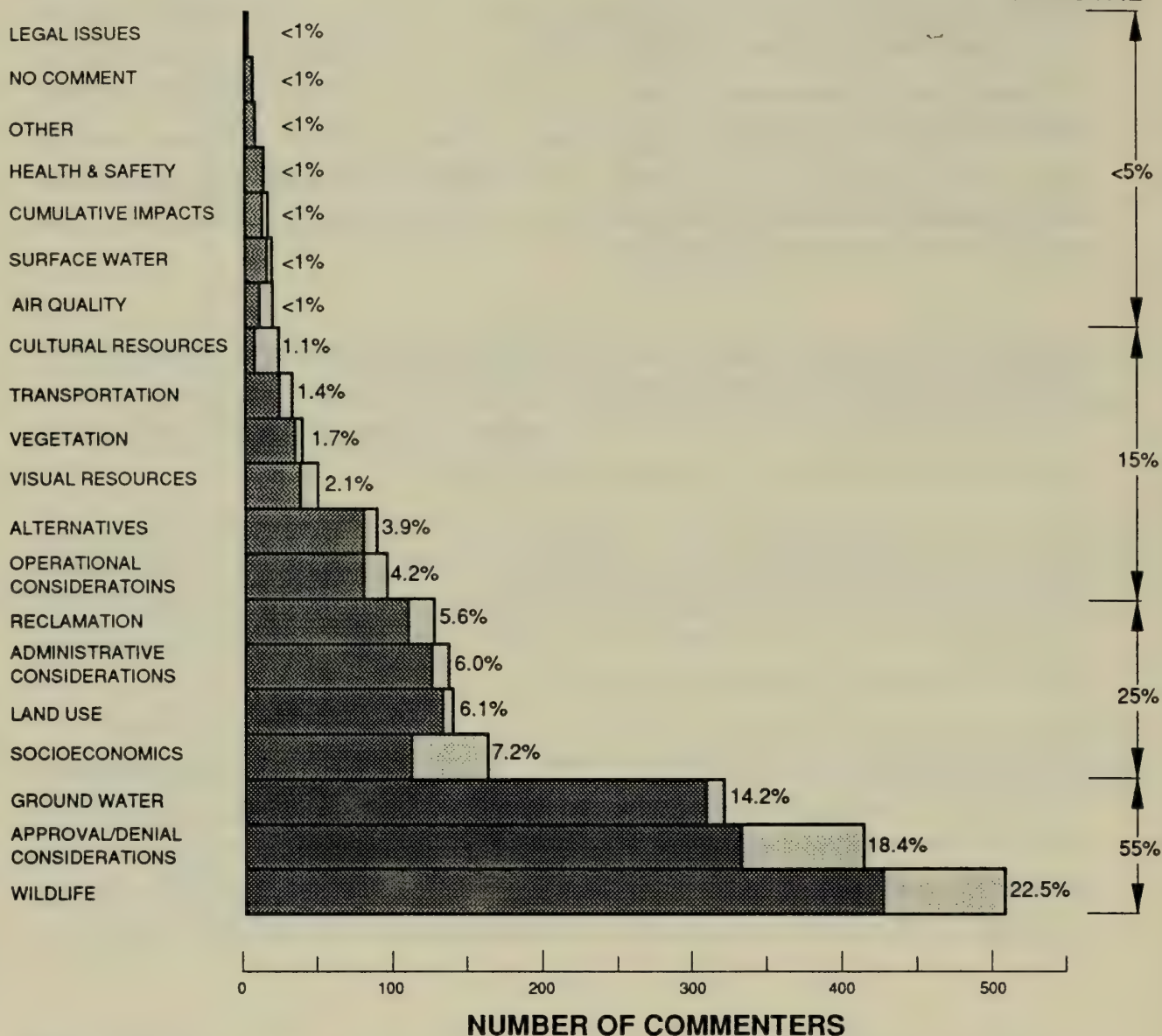
2. The relative interest in the issues evaluated is depicted in Figure 2.1 (Public Input Analysis Issues Ranking). This graph illustrates each of the issues raised in the written and oral comments, and the relative public interest. As indicated in the figure, 55 percent of the comments submitted centered on the environmental issues of wildlife and ground water or were opinions on project approval/denial. The majority of wildlife comments were on the desert tortoise while the majority of ground water comments related to concerns about Piute Spring.
3. About 25 percent of the comments submitted reflected an interest in socioeconomics, land use (EMNSA compatibility, recreation, proposed Mojave National Park, etc.), administrative considerations (mitigation compliance, other documentation, compensation, bonding, agency responsibility), and reclamation (revegetation, backfilling, etc.).
4. Less than 15 percent of the issues mentioned related to operational considerations (management policies, processing methods, reagents, waste disposal, etc.), alternatives, visual resources, vegetation, transportation and cultural resources. Remaining issues totaled less than five percent of the comments received.
5. The public comments received did not change the analyses or conclusions regarding environmental impacts of the Project presented in the Draft EIS/EIR, or Supplement. Instead, the input resulted in the adoption of suggestions or additional forms of mitigation. This additional mitigation, which in some cases modified the conceptual project design, is reflected in Section 3.1 (Final Project Design) and 3.2 (Mitigation Measures) of this Final EIS/EIR.

### 2.2.1 GENERAL ISSUES COMMENTS

1. The majority of comments submitted were general in nature and expressed interest in issues such as the use of cyanide, the potential effects on Piute Spring, the desert tortoise, the compatibility of the Proposed Action with the EMNSA, and reclamation. Few of these commenters asked questions that had not already been evaluated in the Draft EIS/EIR and Supplement. Most of these general concerns were voiced in conjunction with opinions on project approval/denial. These concerns were anticipated as these are the same issues that have been the focus of public interest since the initial public scoping process. While it is evident that many of the commenters had not reviewed the documents in detail, some commenters did request clarification on points addressed in the Draft EIS/EIR and Supplement.





**ISSUES****PERCENT  
OF TOTAL****EXPLANATION:**

This graph shows the frequency with which issues were raised in comments submitted by letter and at public hearings. The graph shows both the number of commenters that raised each issue, and the percent of the total comments. For example, of the total number of comments received, 410 comments related to Approval/Denial Considerations (opinions on project approval). About 330 of those comments were in response to circulation of the Draft EIS/EIR, and about 80 were in response to circulation of the Supplement. The 410 comments represented 18.4% of the total comments received on this project. Also, of the over 500 comments received, more than half (55%) were on three issues: Ground Water, Approval/Denial, and Wildlife. The potential effects of the project's impact on wildlife and the effects of ground water withdrawals were two of the primary issues evaluated in the Draft EIS/EIR.

DRAFT EIS/EIR COMMENTS



SUPPLEMENT COMMENTS

**NOTE:**

See Table 2.1 for a list of the subjects considered in each issues category.

**FIGURE 2.1****PUBLIC INPUT ANALYSIS  
ISSUES RANKING**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.

2. These general concerns are collectively addressed as summarized responses in Section 4.1 (Collective Responses). Clarification on the environmental evaluations and recommendations in the Draft EIS/EIR and Supplement is provided.

### 2.2.2 SPECIFIC TEXT COMMENTS

1. The Draft EIS/EIR and Supplement were circulated to numerous agencies having jurisdiction over natural resources that could be affected by the Proposed Action, or having expertise or interest in environmental resources. In addition, interested organizations and businesses received the documents or were noticed of their availability. A number of agencies, organizations/businesses, and individuals submitted specific comments or opinions based on review of the environmental documents. The majority of these comments requested clarification on specific points addressed, while some provided suggestions on the evaluation of impacts and determination of specific mitigation measures. Replies to comments from agencies are provided in Section 4.2 (Responses to Agencies). Comments from organizations are responded to in Section 4.3 (Responses to Organizations). Responses to individuals whose concerns were representative of public comment or who had detailed questions or suggestions regarding the project are presented in Section 4.4 (Responses to Individuals).

## 2.3 LIST OF COMMENTERS AND INDEX TO RESPONSES

1. A list of issues raised in the comment letters and public hearings is compiled in Table 2.1 (List of Issues and Index to Information). Since most of the comments raised issues that had already been addressed in the Draft EIS/EIR or Supplement, the table indicates where in those documents commenters may find the evaluations. The table also references issues for which further information is provided in this Final EIS/EIR.
2. Table 2.2 (List of Commenters Index to Responses) is a list of each commenting agency, organization and individual. The list indicates the appendix page where the original comment letter or transcript is located, the issues raised and the location where the requested information can be found. Since public hearing comments were general in nature, they are referenced to Section 4.1 (Collective Responses) except in some cases, where a subsequent detailed letter was submitted. Where specific comments were submitted requiring a detailed response, the commenter is referred to the Section of this Final EIS/EIR containing the response. Where commenters raised issues that had been previously addressed in the Draft EIS/EIR or Supplement, they are referred to Table 2.1 for the location of that information.



TABLE 2.1

## LIST OF ISSUES RAISED AND INDEX TO INFORMATION

Page 1 of 4

ISSUE/TOPIC	DRAFT EIS/EIR	SUPPLEMENT	FINAL EIS/EIR
<b>1. ADMINISTRATIVE CONSIDERATIONS</b>	--	--	4.1.3
a. EIS/EIR Adequacy/Requirements	--	2.2.2	1.2
b. Other Documents/Information	13.0	9.0	User's Guide
• Ground Water Monitoring/Contingency Plan	5.3.1.2	--	4.1.5.1
• Drilling on State Lands	3.2.7.5	--	D/R
• Mitigation Compliance Program	6.1	6.0	4.1.3.3
• Reclamation Plan	3.2.8.2	--	1.5
• Spill Prevention/Preparedness Plan	6.7.1.2	--	D/R
• Tortoise Habitat Compensation	--	3.1.1.4	4.6.1.2
c. BLM/County Responsibilities	2.2, 2.4.5	--	4.1.3.1
d. Bonding	3.2.8.3	--	4.1.3.2
e. Lead Agency Responsibility/Jurisdiction	2.2, 2.4.5	--	1.4, 4.1.3.1
f. Applicable Laws	2.4, 2.5	2.1	1.2
• California Environmental Quality Act	2.3.1	2.1	1.2
• Federal Land Policy and Management Act	4.10.1, 2.4.5.1	--	D/R
• Mining Law of 1872	2.4.5.1	--	D/R
• National Environmental Policy Act	2.3.1	2.1	1.2
g. Need for Project	3.2.1	--	D/R
<b>2. AIR QUALITY</b>	4.6, 5.6, 6.6, Appendix F	3.2.3	D/R
a. Adherence to Standards	2.4.3	--	D/R
b. Dust Control	3.2.5.5, 6.6.1.2, 3.2.4.1	3.2.3.1	D/R
c. Monitoring	6.6.1.2	--	D/R
d. Precipitation	4.6.1	--	D/R
<b>3. ALTERNATIVES</b>	3.3, 3.4	4.0	3.3
a. No Action Alternative	3.4.2	4.5	D/R
b. Other Alternatives	3.3.3.4	4.0	--

1. Explanation: This table identifies each topic raised as a result of public and agency comment on the Draft EIS/EIR and Supplement. For each topic, the chapter/section of the Draft EIS/EIR and/or Supplement containing the appropriate information is indicated, or the Final EIS/EIR chapter/section where explanations in response to comments are referenced. This table serves as an index to Table 2.2.

## 2. Notes:

"D/R" signifies a Direct Response provided to commenter in Final EIS/EIR Section 4.2, 4.3 or 4.4.

"N/A" signifies no applicable section.





**TABLE 2.1**  
**(Continued)**

ISSUE/TOPIC	DRAFT EIS/EIR	SUPPLEMENT	FINAL EIS/EIR
<b>4. APPROVAL/DENIAL CONSIDERATIONS</b>	2.4.5.1	4.5.2	4.1.2
a. Unnecessary/Undue Degradation	2.4.5.1	--	4.1.2.1
b. Future Mining	8.2.5	5.2, 5.3, 5.4	4.1.2.2
<b>5. CULTURAL RESOURCES</b>	2.4.2, 4.9, 5.9, 6.9	--	Appendix H
a. Native American Resources	2.4.2, 4.9.2.3, 5.9.2.3, 6.9.1.3	--	Appendix H
b. Paleontologic Impacts	5.2.1.3, 6.2.1.2	--	4.2.1.3 (Letter 3)
c. Historic Resources	4.9, 5.9, 6.9	--	Appendix H
<b>6. CUMULATIVE IMPACTS</b>	8.0	5.0	4.1.2.2
<b>7. GEOLOGY</b>	4.2, 5.2, 6.2	--	--
<b>8. GROUND WATER</b>	2.4.4, 4.3, 5.3, 6.3	--	4.1.5
a. Cyanide Use	3.2.5.4, 5.7.1.2, 6.7	--	4.1.5.2
b. Hydrologic Analysis	4.3, 5.3	--	4.1.5.1
c. Monitoring/Mitigation	6.3	--	4.1.5.1
d. Piute Spring	4.2.2.2, 4.3, 5.3, 6.3	--	4.1.5.1
e. Water Use	2.5.2, 3.2.5.1	3.2.2.3	4.1.5.4
<b>9. HEALTH AND SAFETY</b>	5.7, 6.7	--	D/R
a. Mine Shafts/Adits (re: Wildlife)	5.5.1.1, 6.5.1.2	--	D/R
b. Mine Pits	3.2.8.2	--	D/R
c. Project Personnel	3.2.7.3, 5.7, 6.7	--	D/R
d. Public Safety	3.2.7.3, 6.7.1.1	--	D/R
<b>10. LAND USE</b>	4.10, 5.10, 6.10	--	4.1.7
a. East Mojave National Scenic Area Compatibility	4.10.1.1, 5.10.1.1	--	4.1.7.1
b. Grazing Uses	4.10.2.3, 4.10.3.2, 5.10.1.2, 6.10.1.2	--	D/R
c. Proposed Mojave National Park	--	--	4.1.7.2
d. Recreation	5.10.1.2, 4.10.2.4, 4.10.3.3	--	D/R

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**TABLE 2.1**  
**(Continued)**

ISSUE/TOPIC	DRAFT EIS/EIR	SUPPLEMENT	FINAL EIS/EIR
<b>LAND USE - Continued</b>			
e. Wilderness Study Areas	5.10.1.2, 4.10.2.5, 4.10.3.4, 2.4.5.1, 4.10.1.1	--	D/R
<b>11. LEGAL ISSUES</b>	--	--	D/R
a. Mineral Resource Use/Conservation	3.2.8.1, 3.2.8.2	--	D/R
b. Mining Royalties	--	--	4.1.8
c. Public Participation in EIS/EIR Process	2.5	2.1.2, 2.2.1	2.0
<b>12. MITIGATION MEASURES</b>	6.0	3.2.1.4, 3.2.2.3, 3.2.3.3	3.2
<b>13. NO COMMENT (Letter including No Comment)</b>	N/A	N/A	N/A
<b>14. OPERATIONAL CONSIDERATIONS</b>	3.2	3.2	3.1
a. Management Policies (Re: Drugs, Alcohol, Wildlife)	6.5.1.2	--	D/R
b. Gold Recovery Process	3.2.4.3, 3.2.4.4	--	D/R
c. Hazardous/Toxic Materials Use/Disposal	3.2.5.7, 3.2.5.4, 3.2.4.3, 5.7.1.5	3.2.2	3.1.2
d. Ore Processing Methods	3.2.4.2, 3.2.4.3, 3.2.4.4, 3.3.1.3	--	D/R
e. Power Supply	3.2.5.2	3.2.3	D/R
f. Reagent Containment	3.2.5.4, 3.2.5.7, 5.7, 6.7	3.2.2	D/R
g. Waste Disposal	3.2.5.7, 5.7, 6.7	--	D/R
<b>15. RECLAMATION</b>	3.2.8	--	1.5, 4.1.4
a. Backfilling	3.2.8.2, 3.3.1.2	--	3.3, 4.1.4.1
b. Revegetation	3.2.8.2, 5.8.1, 6.4.1.2	--	4.1.4.2
c. Access Route	3.2.6.2	3.2.1	D/R
d. Reclamation Plan	3.2.8.2	--	1.5
e. Soil Stockpiles	3.2.4.5	--	D/R
f. Temporary Closure	--	--	D/R
<b>16. SOCIOECONOMICS</b>	4.11, 5.11, 6.11	--	4.1.8
a. Economic Effects, Employment	3.2.7.2, 5.11	--	D/R
b. Infrastructure	4.11.3, 4.11.4, 4.12	--	D/R
c. Population Impact	5.11.1.2	--	D/R
d. Royalties	5.11.1.1	--	4.1.8

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**TABLE 2.1**  
**(Continued)**

ISSUE/TOPIC	DRAFT EIS/EIR	SUPPLEMENT	FINAL EIS/EIR
<b>17. SURFACE WATER</b>	2.4.4, 4.3.2, 5.3.1.1	--	--
a. Drainage	6.3.1.1, 3.2.5.6	--	4.1.5.3
b. Streambed Alteration	3.2.5.6	--	4.1.5.3
<b>18. TRANSPORTATION</b>	3.2.6	--	D/R
a. Bussing	--	--	D/R
b. Project Access Routes	3.2.6.1	3.2.1	3.1.3
c. Traffic	3.2.6.3	--	D/R
<b>19. VEGETATION</b>	4.4, 5.4, 6.4	--	D/R
a. Habitat Loss	5.4.1, 5.5.1.1	3.2.1.3	D/R
b. Vegetation Salvage Sales	6.4.1.2	--	D/R
<b>20. VISUAL RESOURCES</b>	4.8, 5.8, 6.8	--	D/R
<b>21. WILDLIFE</b>	4.5, 5.5, 6.5	3.1.1, 3.2.2	4.1.6
a. Bats/Habitat	6.5.1, 6.5.1.2, 4.5.2.4, 5.5.1.1	--	D/R
b. Bighorn Sheep	4.5.2.3, 5.5.1.2	--	4.6.1.3
c. Birds	4.5.1.3, 5.5.1.1	6.5.1.2, 5.5.1.2	D/R
d. DFG Consultation	--	3.1.1.3	D/R
e. Cyanide Use	5.5.1.2	--	4.1.6.1
f. Desert Tortoise	6.5.1.2, 5.5.1.2	3.1.1, 3.2.1	4.1.6.2
g. Habitat	4.4, 5.4.1, 5.5.1	3.2.1.3	4.1.6.2, 4.1.6.3
h. Netting of Ponds	6.5.1.2, 3.2.7.4	3.2.2	3.1.2
i. Raptors/Ravens	4.5.1.3, 4.5.2.1	6.5.1.2, 5.5.1.2	3.2.3
j. Water Guzzlers	6.5.1.2	--	D/R
<b>22. OTHER</b>	--	--	D/R
a. Previous Environmental Studies Completed	2.1	--	D/R
b. Request for Clarification	N/A	N/A	D/R
c. Request for Information	N/A	N/A	D/R

1. Explanation: This table identifies each topic raised as a result of public and agency comment on the Draft EIS/EIR and Supplement. For each topic, the chapter/section of the Draft EIS/EIR and/or Supplement containing the appropriate information is indicated, or the Final EIS/EIR chapter/section where explanations in response to comments are referenced. This table serves as an index to Table 2.2.
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TABLE 2.2

## LIST OF COMMENTERS AND INDEX TO RESPONSES

Page 1 of 26

COMMENTS	DRAFT EIS/EIR			SUPPLEMENT		
	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/ EIR Section)	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/ EIR Section)
<b>AGENCY - FEDERAL</b>						
Bureau of Indian Affairs Farris, George R.	C.1-3	N/A	N/A	None	N/A	N/A
Hayes, Patrick A.	C.1-4	13	4.2.1.1	None	N/A	N/A
Bureau of Land Management Wycoff, Runore	None	N/A	N/A	E.1-3	21, 21f	4.2.2.1
Bureau of Mines Banister, D'Arcy P.	C.1-4	11a, 12, 13	4.2.1.1	None	N/A	N/A
Department of Health & Human Services Clapp, David E.	C.1-5	9cd	4.2.1.1	None	N/A	N/A
Geological Survey Eugene H. Roseboom, Jr.	None	N/A	N/A	E.1-4	15a	4.2.2.1
Environmental Protection Agency Wieman, Deanna	C.1-6	1abd, 2a, 3b, 8bcde, 10ae, 12, 14c, 15bd, 17ab, 21	4.2.1.1	E.1-4	2, 21f, h	4.2.2.1
Fish and Wildlife Service Harper, Brooks	C.1-11	1abd, 4a, 5a, 6, 8bcd, 13, 14c, 15ab, 18c, 19a, 21, 20efi	4.2.1.1	None	N/A	N/A
National Park Service Chez, John S.	C.1-15	13	4.2.1.1	None	N/A	N/A
<b>AGENCY - STATE</b>						
<b>ARIZONA</b>						
Department of Mines and Mineral Resources Niemuth, Nyal J.	C.1-19	4, 21b	(1)	E.1-9	4	4.2.2.2
<b>CALIFORNIA</b>						
Department of Justice Cordero, Antonette B.	C.1-20	1ab, 10, 14c, 15ad, 19a, 20, 21bfg	4.2.1.2	None	N/A	N/A
Fiering, Susan S.	None	N/A	N/A	E.1-10	1bf, 3b, 6, 21f	4.2.2.2
Division of Mines and Geology Sandecki, Michael	D.1-18	13	N/A	None	N/A	N/A
Office of Planning and Research Martinez, Robert P.	C.1-23	13	N/A	None	N/A	N/A
Office of Planning and Research Nunenkamp, David C.	C.1-23	N/A	N/A	None	N/A	N/A
Regional Water Quality Control Board Sweeney, W. Paul	None	N/A	N/A	E.1-13	17a	4.2.2.2

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Resources Agency of California Snow, Gordon F.	C.1-24	N/A	N/A	None	N/A	N/A
- Department of Conservation O'Bryant, Dennis J.	C.1-25	1bd, 8bd, 15ab, 19	4.2.1.2	None	N/A	N/A
- Department of Fish and Game Bontadelli, Pete	C.1-26	1abdf, 6, 8bce, 12, 19, 21befgj	4.2.1.2	None	N/A	N/A
State Lands Commission Sanders, Dwight E.	C.1-29	1b, 15ad, 21h	4.2.1.2	None	N/A	N/A
NEVADA						
Nevada Department of Minerals Lombardo, Walt	D.3-9	1a, 4, 8cd, 14c, 15, 16a, 21bfh	(1)	None	N/A	N/A
Nevada Legislature Jeffrey, Jack	None	N/A	N/A	E.1-14	4, 5, 16ad, 20, 21	4.2.2.2
Governor's Office Miller, Bob	None	N/A	N/A	E.1-14	4	4.2.2.2
AGENCY - LOCAL						
CLARK COUNTY						
Department of Aviation Broadbent, Robert N.	None	N/A	N/A	E.1-17	4, 5, 16ad, 20, 21	4.2.2.3
Department of Comprehensive Planning Holmes, Richard B.	C.1-33	16bc, 18ac, 21f	4.2.1.3	None	N/A	N/A
Board of County Commissioners Dondero, Thalia M.	None	N/A	N/A	E.1-16	21f	4.2.2.3
COUNTY OF SAN BERNARDINO						
Environmental Health Services Stevens, Mark	C.1-35	14cg	4.2.1.3	None	N/A	N/A
San Bernardino County Museum Griesemer, Dr. Allen D.	C.1-39	1a, 5b	4.2.1.3	E.1-17	5b	4.2.2.3
BUSINESS/ COMMERCIAL						
Advanced Concrete Technology Reynolds, Bill	D.1-26	8bcd, 15	(1)	None	N/A	N/A
American Cyanamid, Co. Burton, Jim	D.2-12	9c, 14c	(1)	None	N/A	N/A
The Argee Corporation Hauck, Richard V.	C.1.2-3	4	(1)	None	N/A	N/A
Wilson, Garth L.	None	N/A	N/A	E.2-3	1b, 3, 4	(1)
Astro Minerals Burns, Dick	C.2-4	4, 16a	(1)	None	N/A	N/A
Avocet Enterprises Childs, Henry E., Jr., Ph.D.	C.2-4	1a, 4, 21e	(1)	None	N/A	N/A
Bagdad-Chase, Inc. Buller, Paul	C.2-5	4, 16a	(1)	E.2-3	3, 4	(1)
Baker Truck Service Johnson, Marlene	C.2-5	4, 16a	(1)	None	N/A	N/A

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Baughman & Turner, Inc. Cave, Charles E.	C.2-6	4	(1)	None	N/A	N/A
Beck's Office Furniture & Design, Inc. Beck, James F.	C.2-6	4	(1)	None	N/A	N/A
Bond Gold Bullfrog, Inc. Bingham, J. P.	C.2-7	4	(1)	E.2-4	4	(1)
Bond Gold Colosseum, Inc. Attaway, Mike	D.1-5	8e, 12, 14c, 18c, 20, 21f	(1)	None	N/A	N/A
Snell, Sally L.	C.2-7 D.2-18	12, 15, 21f	4.3.1.1	None	N/A	N/A
Bond Gold Corporation Gochmour, Lee "Pat"	None	N/A	N/A	E.2-4	2, 4, 16ad, 21ef	(1)
Brown & Root U.S.A. Zander, S. A.	C.2-8	4	(1)	None	N/A	N/A
Brubaker-Mann, Inc. Mann, Bill	D.2-13	16a	(1)	None	N/A	N/A
Rohn, Julie Mann	C.2-9	1a, 4, 16a	(1)	E.2-5	4, 21f	(1)
C&C Mining & Land Company Cole, James W.	C.2-9	4, 16a	(1)	E.2-6	1b, 3, 12, 16ad	(1)
C. S. Grigg & Sons Grigg, Fred C.	C.2-14	4, 16a	(1)	None	N/A	N/A
California Nature Magazine Garrett, James	D.1-31	10a	(1)	None	N/A	N/A
Capitol North American Rydalch, Hugo	C.2-10	4, 16a	(1)	None	N/A	N/A
Ward, Douglas	None	N/A	N/A	E.2-7	4, 12, 21	(1)
Capparelli & Associates Capparelli, Suzan K.	C.2-10	4, 8d, 10a, 14c, 21bf	(1)	None	N/A	N/A
Cashman Equipment Company Cashman, James III	None	N/A	N/A	E.2-8	4, 5, 12, 16ad, 20, 21g	(1)
Hicks, Bill	C.2-11	4, 10, 16	(1)	None	N/A	N/A
Chilton Engineering and Surveying Ltd. Chilton, Mark	C.2-13	4, 16a	(1)	E.2-8	4	(1)
Clark's Mobile Home Park Clark, Lois	C.2-13	4, 15d, 16a	(1)	E.2-9	16a, 19, 21	(1)
Cummins Intermountain, Inc. Mirch, Ken	C.2-14	4, 10, 16a	(1)	None	N/A	N/A
Degussa Corporation Schmitt, Gunter W.	C.2-15	14c	(1)	None	N/A	N/A
Drew Industrial, Inc. Hickman, Robert M.		See Individuals	(1)	E.2-10	12, 16a	(1)
Dupont Chemical Company Pawloski, James S.	D.3-14	14c	(1)	None	N/A	N/A
Echo Bay Exploration, Inc Boden, Dave R.	C.2-18	1a, 4	(1)	None	N/A	N/A

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Electronic Engineering Co. of California Garr, Howard, F.	C.2-19	4	(1)	None	N/A	N/A
Enviro-Tech Management Consultants, Inc. Hinds, W. V.	C.2-19	1a, 4, 16a	(1)	None	N/A	N/A
Environmental Studies Associates Toole, T. T.	C.2-20	4	(1)	None	N/A	N/A
Farmers Insurance Group George, Gary J.	C.2-20	4, 8d, 19a, 21bf	(1)	None	N/A	N/A
George Rodda, Jr. Rodda, George Jr.	None	N/A	N/A	E.2-11	4, 5c, 16a, 21	(1)
Gibbons Co. Davidson, F. Vance	C.2-21	1a	(1)	E.2-11	21f	(1)
Gilbert Western Corporation Lockwood, Larry	D.3-11	14c	(1)	None	N/A	N/A
Scott, Frank T.	C.2-21	4, 16a	(1)	None	N/A	N/A
Goldfields Operating Company- Mesquite Filler, Robert T.	None	N/A	N/A	E.2-12	4, 16a	(1)
Todd, Larry R.	D.1-20	14c, 21e	(1)	None	N/A	N/A
Granite Construction Goodson, Darryl	D.1-21	16a	(1)	None	N/A	N/A
Gresham, Vamer, Savage, Nolan & Tilden Tilden, William M.	None	N/A	N/A	E.2-12	4, 5, 12, 16ad, 20, 21g	(1)
Haycock Distributing Co., Inc. Haycock, Clair	C.2-22	1a, 4	(1)	E.2-13	12, 16a,d	(1)
H.B.C. Publications, Inc. Fisher, Robert Grove	None	N/A	N/A	E.2-13	5, 14f, 21f	(1)
Herb's Grocery-Gas-Second Hand Shop Eads, Herbert L. & Geraldine	C.2-22	4, 15d, 16a	(1)	E.2-14	2, 4, 12, 14f, 16a	(1)
Holman's of Nevada Inc. Hill, Deric	C.2-23	4, 15d, 16a	(1)	None	N/A	N/A
Inland Economic Consultants Blumner, Sidney M., Ph.D.	C.2-23	4, 8d, 21bef	(1)	None	N/A	N/A
Inquipco Rhu, Roger	D.3-5	14c, 15, 21	(1)	None	N/A	N/A
Jake's Crane, Rigging & Transport International Carder, D. Ross	C.2-24	4, 21f	(1)	E.2-14	4, 12, 21	(1)
Jim Good Marketing Good, James H.	C.2-25	4	(1)	None	N/A	N/A
Kermit Skeie Associates, Inc. Skeie, Kermit	None	N/A	N/A	E.2-15	1ac	(1)

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Ledcor Construction Inc. Hoar, G. E	C.2-26	1a	(1)	None	N/A	N/A
Legend Metallurgical Laboratory Lewis, Mark F.	C.2-26	1d, 4	(1)	None	N/A	N/A
Lost Dutchman Construction, Inc. Neely, Glenn	C.2-27	4	(1)	None	N/A	N/A
Marsh & McLennan Cory, Ronald D.	C.2-27	4, 16a	(1)	None	N/A	N/A
Heckethorn, David C.	None	N/A	N/A	E.2-15	12, 16a, 21	(1)
Maskell-Robbins Incorporated Stockton, John D.	C.2-28	4, 14c	(1)	E.2-16	1b, 2b, 14f, 21f	(1)
McClelland Laboratories, Inc. McClelland, Gene E.	C.2-30	4	(1)	E.2-17	1b, 3, 4	(1)
Michael Rosenthal, M.D., Inc., Rosenthal, Michael J.	C.2-31	3a, 8e, 10a	(1)	None	N/A	N/A
Mine & Mill Engineering, Inc. Patwardhan, Ashok	C.2-31	4	(1)	E.2-18	3, 4, 12, 14f, 21ef	4.3.2.1
Morrison-Knudsen Company, Inc. Chi, Steven Y.	C.2-34	1a, 4, 14	(1)	E.2-20	1b, 4, 12	(1)
Nalco Chemical Company Campbell, C. Scott	C.2-35	4, 12	(1)	None	N/A	N/A
Nordberg, Inc. McBride, William	D.1-6 D.3-4	16a	(1)	None	N/A	N/A
The Permanente Medical Group, Inc. Leo, Gregory, M.D.	C.2-35	4, 8d, 14c	(1)	None	N/A	N/A
Petrolane Childress, David A.	C.2-36	4, 14e, 16a	(1)	None	N/A	N/A
Pluess-Stauffer (California) Inc. Acherhmann, Hans J.	C.2-37	4	(1)	None	N/A	N/A
RAM Project Management Associates Reyburn, Richard L.	C.2-37	4, 5, 16a, 20, 21g, 16a	(1)	E.2-21	4, 12, 16a, 21fg	(1)
The Raring Corporation Raring, David	D.1-13 D.2-7	2, 2a, 8e	(1)	None	N/A	N/A
Renteria Motel Conn, Beverly	C.2-38	4	(1)	None	N/A	N/A
R. S. Shoemaker Ltd. Shoemaker, R. S.	C.2-38	4	(1)	None	N/A	N/A
Scotia, Inc. Barber, Warren D.	C.2-39	4, 16a	(1)	None	N/A	N/A
Searchlight Nugget Casino Doing, Verlie, Mrs.	C.2-39	4	(1)	E.2-21	4, 21f	(1)
Searchlight Storage and Bait Walsh, Red and Sandy	C.2-40	4, 16a	(1)	None	N/A	N/A

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Serrot Corporation McCafferty, John A.	C.2-41	4, 14c	(1)	None	N/A	N/A
State Incorporated McEwan, Lloyd C.	C.2-42	4, 16a	(1)	E.2-22	4, 16a	(1)
Steffen, Robertson and Kirsten Thatcher, Jeff	None	N/A	N/A	E.2-23	4, 12	(1)
Suburban Propane Chappell, Steven C.	C.2-43	2, 14e	(1)	None	N/A	N/A
Sunshine Mining Company Young, Allan R.	C.2-44	1a, 2, 4, 5, 7, 8ae, 9, 10, 16, 17a, 19a, 20, 21, 21f	4.3.1.1	None	N/A	N/A
T.I.C. Bennett, Gary L.	D.1-21	14a, 16a	(1)	None	N/A	N/A
T.N.T. Development, Inc. Topliss, Robert T.	C.2-46 D.3-15	4, 15, 21b	(1)		See Individuals	
Tracy Drilling Company Tracy, Diane	C.2-46	4, 16a	(1)	E.2-24	4, 14f, 16a, 21f	(1)
Universal Travel Stainer, Jamie	C.2-47	4	(1)	None	N/A	N/A
W. A. Murphy, Inc. McCardle, Bill	C.2-47	4	(1)	None	N/A	N/A
Washington Corporations Wilkes, Leroy E.	C.2-48 D.3-12	1a, 12, 15, 16a, 21	(1)	E.2-24	1b, 4, 12	(1)
Whitney & Whitney, Inc. Whitney, Dr. John W.	C.2-48	4, 16a	(1)	None	N/A	N/A
Wildlife Technology Gibson, Bruce	D.1-17	16a, 21ch	(1)	None	N/A	N/A
W.S. Tyler Company Lipnak, Martin W.	D.3-6	2b	(1)	None	N/A	N/A
YKL Ranch Weikel, Karl F.	C.2-49	4, 10b	4.3.1.1	None	N/A	N/A
<b>CIVIC ORGANIZATIONS</b>						
Baker Area Chamber of Commerce						
Doughtery, Shirley	None	N/A	N/A	E.2-27	4, 16a	(1)
Price, Ann	C.2-53	4, 16a	(1)	None	N/A	N/A
Barstow-Victorville Mining Council	D.2-7	14c, 21, 21f	(1)	None	N/A	N/A
Dunlap, Henry						
Citizens Against Taxes Aleman, Pat	D.2-15	4, 16a	(1)	None	N/A	N/A
Crest Forest Property Owners Association	C.2-54	4	(1)	None	N/A	N/A
Stoffel, Bill						
Friends of the Mojave Road Casebier, Dennis	D.1-25	8d, 15, 21, 21ef	(1)	E.2-28	4, 5, 20, 21g	(1)

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Gold Searchers of Southern Nevada Dixon, William	D.3-6	4, 10, 21	(1)	None	N/A	N/A
Henderson Chamber of Commerce Johnson, Gary	C.2-54	1a, 16a	(1)	E.2-28	16a, 21f	(1)
Searchlight Town Board Doing, Verlie	D.3-3	4, 15	(1)	None	N/A	N/A
<b>CONSERVATION/ ENVIRONMENTAL GROUPS</b>						
California Desert Protection League Roberge, Don	D.2-8	1d, 8ace	(1)	None	N/A	N/A
California Native Plant Society Clemons, Duffie	C.2-57	1d, 8de, 15, 16d	(1)	E.2-31	4, 16	4.3.2.2
Haas, Lu	D.1-10	3a, 4a, 8a, 10a, 14c, 19a, 21efg	(1)	None	N/A	N/A
Citizens for Mojave National Park, Inc. Burk, Peter	C.2-58 D.1-23 D.2-3	1acd, 3a, 4a, 8bde, 10ac, 14c, 15, 16a, 18c, 21ef	4.3.1.2	E.2-32	3a, 8de, 10a, 12, 15, 15ab, 21ef	4.3.2.2
Defenders of Wildlife Spotts, Richard	C.2-60	3a, 6, 8cd, 10a, 21, 21f	(1)	None	N/A	N/A
Desert Bighorn Council Weaver, Richard A.	C.2-61	21bg	4.3.1.2	None	N/A	N/A
Desert Protection Council Allen, Harriet	D.2-15	1f, 10e, 15, 16a, 21f, 22c	(1)	None	N/A	N/A
Desert Protective Council, Inc. Swedelius, Mary	C.2-62	1acde, 3a, 4, 7, 11c, 21f, 22b	4.3.1.2	None	N/A	N/A
Desert Survivors - Orrick, Herrington & Sutcliffe Kari, W. Douglas	C.2-73 D.1-7	1adf, 2, 4a, 8d, 10, 10c, 15a, 21ef	4.3.1.2	E.2-33	10a, 14f, 15ad	4.3.2.2
Desert Tortoise Council Pearson, Daniel	C.2-64	1abd, 6, 14c, 15bd, 17b, 21adf	(1)	None	N/A	N/A
Desert Tortoise Council St. Amant, J. A.	C.2-68	1bc, 3a, 4a, 6, 12, 14fg, 15be, 17b, 18bc, 19ab, 21adfgij	(1)	None	N/A	N/A
Desert Tortoise Preserve Committee Chavez-Scales, Jayne L.	D.1-11	1d, 8, 18c, 21, 21ef	(1)	None	N/A	N/A
Ecology Center of Southern California Harlowe, Anna	C.2-70	3a, 8d, 21, 21f	(1)	None	N/A	N/A

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National Outdoor Coalition Brashear, H. Marie	D.1-24	8, 18c, 10a, 21	(1)	None	N/A	N/A
National Parks and Conservation Association Butcher, Russel D.	C.2-71	1b, 8d, 15, 15c, 18bc, 21efh, 22b	4.3.1.2	E.2-34	1b, 17a, 14f, 18b	4.3.2.2
Natural Resources Defense Council Wald, Johanna H.	C.2-99	1af, 3, 3a, 4a, 6, 8abde, 10ace, 12, 14ce, 15, 15abde, 21bcfgh	4.3.1.2	E.2-40	1f, 2, 2b, 3, 10a, 12, 14f, 15, 15ad, 16, 18b, 21f	4.3.2.2
The Nature Conservancy Livermore, Dave	None	N/A	N/A	E.2-35	4, 21f	(1)
San Bernardino Valley Audubon Society Sanders, Andrew C.	D.1-18	6, 8c, 12, 19, 21, 21bf	(1) Appendix F	None	N/A	N/A
Sierra Club Hughes, Elden	D.1-8	1d, 3a, 8d, 15a, 21ch	(1)	None	N/A	N/A
Sierra Club, California/Nevada Mining Committee Haye, Stan	C.2-75	1bdf, 4a, 8de, 10a, 15, 15b, 21, 21cf	4.3.1.2	3.2-36	8d, 15, 15ab	4.3.2.2
Sierra Club Legal Defense Fund	C.2-76	1af, 2d, 3, 6, 7, 8abc, 9b, 10e, 12, 15, 15b, 17a, 19, 20, 21, 21efh	4.3.1.2	None	N/A	N/A
Curry, Robert R.	C.2-83	7, 8bcd	4.3.1.2	None	N/A	N/A
Reames, Deborah S.	None	N/A	N/A	E.2-37	18b, 21f	4.3.2.2
Stebbins, Robert C.	C.2-87	1b, 8e, 10e, 14c, 15b, 18c, 21acchi	4.3.1.2	None	N/A	N/A
Wilshire, H. G.	C.2-90	1a, 7, 8bd, 9b, 15, 15ae, 17a, 20	4.3.1.2	None	N/A	N/A
Sierra Club, Las Vegas Group Brickey, David W.	D.3-7	8bd, 15, 21, 21efh	(1)	None	N/A	N/A
Sierra Club, Mojave Group Simons, Scott	C.2-94 D.1-14	1ab, 2, 3a, 4, 8be, 14acf, 15, 17a, 22c	4.3.1.2	None	N/A	N/A
Sierra Club, Public Lands Committee Hartman, Bob	D.1-32	10, 10ac	(1)	None	N/A	N/A
Sierra Club, San Diego Chapter Morgan, Camille	D.1-16	1a, 4, 4a, 8d, 10a, 15, 16d, 20, 21eg	(1)	None	N/A	N/A
Smith, Geoffrey	D.1-15	10c, 16a	(1)	None	N/A	N/A
Sierra Club, San Geronio Chapter Hammond, Steve	D.1-9	1a, 4a, 10ac, 15d, 21,	(1)	None	N/A	N/A
Peters, Holme		See Individuals		E.2-39	3a, 8d, 15, 21f	4.3.2.2
Sierra Club, Tahquitz Group Schwenn, Bern	D.1-28	1a, 3a, 10a, 16a	(1)	None	N/A	N/A

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Society for the Conservation of Bighorn Sheep Lutz, Loren L.	C.2-96	8cde, 15, 15b, 21, 21befgj	4.3.1.2	None	N/A	N/A
Wilderness Impact Research Foundation Gerber, A. Grant	C.2-98	16a	(1)	None	N/A	N/A
The Wilderness Society Blumberg, Louis Schifferle, Patricia	None	N/A	N/A	E.2-40 E.2-40	1f, 2, 2b, 3, 10a, 12, 14f, 15, 15ad, 16, 18b, 21f	4.3.2.2
Riedy, Norbert J., Jr.	C.2-99 D.1-11 D.3-13	1af, 3, 3a, 4a, 6, 8abde, 10ace, 12, 14ce, 15, 15abde, 21bcfgh	4.3.1.2	None	N/A	N/A
<b>NATIVE AMERICANS</b>						
Fort Mojave Indian Tribe Barrackman, Llewellyn	C.2-121	1a, 5a, 8b, 20, 22b	4.3.1.3	None	N/A	N/A
<b>PROFESSIONAL SOCIETIES</b>						
California Mining Association Krauss, Raymond E.	C.2-126	1a, 4, 10, 10a, 15d	(1)	None	N/A	N/A
Rouse, Glenn F.	C.2-125	15b, 20, 21	(1)	E.2-47	4, 5, 16ad, 20, 21	(1)
Desert Conservation Institute Allender, Margaret	C.2-127	4	(1)	E.2-48	2b, 4, 12, 18b, 21ef	(1)
History of Mining, Inc. Hartill, Russ	D.1-7	1a, 4	(1)	None	N/A	N/A
Holcomb Valley Mining District Webb, T. K.	C.2-127	4, 16a	(1)	None	N/A	N/A
Mountain States Legal Foundation Pendley, William Perry	None	N/A	N/A	E.2-49	4, 16ad, 21f	(1)
Nevada Mining Association Higgins, Lewis R.	C.2-128	1a, 14c, 21	(1)	None	N/A	N/A
Higgins, Rod	None	N/A	N/A	E.2-49	4, 16ad	(1)
Nevada Mining Association, Environmental Committee Stirland, Meade	D.3-8	1a, 2a, 8d, 14c, 15, 21	(1)	None	N/A	N/A
Pacific Mining Association, Western Mining Council, Inc. Ouellette, Gregory P.	C.2-129	4, 10, 15ad	(1)	E.2-50	4, 14ef, 15a, 18b	(1)
Southern Nevada Miners and Prospectors Association Noland, Douglas	D.3-6	4	(1)	None	N/A	N/A
United Mining Council of America, Inc. Dare, Howard W.	D.3-12	4	(1)	None	N/A	N/A

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<b>RECREATION ORGANIZATIONS</b>						
California Association of 4WD Clubs, Inc. Davidson, Patrice	None	N/A	N/A	E.2-53	4, 10d, 18b	4.3.2.3
Orcutt, Mineral Society Lingerfelt, Wes	C.2-132	10d	4.3.1.4	None	N/A	N/A
<b>INDIVIDUALS</b>						
Abbott, Jess R.	C.3-1	4, 16a	(1)	None	N/A	N/A
Ackerman, William T.	None	N/A	N/A	E.3-31	4, 5, 12, 16ad, 20, 21g	
Adams, David A.	C.3-2	4	(1)	E.3-3	4	(1)
Allsop, Richard	C.3-2	21	(1)	None	N/A	N/A
Anderson, Scott	C.3-3	16, 3a, 4a, 8be, 10ac, 15, 20	4.4.1	None	N/A	N/A
Andress, Mr. and Mrs. C. G.	None	N/A	N/A	E.3-31	4, 5, 12, 16ad, 20, 21g	(1)
Anthony, Sue	C.3-213	4, 16b	(1)	None	N/A	N/A
Arbuthnot, Paul E.	None	N/A	N/A	E.3-32	4, 5, 12, 16ad, 20, 21g	(1)
Argott, Robert T.	C.3-4	3a	(1)	None	N/A	N/A
Averhart, Larry	C.3-4	4	(1)	None	N/A	N/A
Averhart, Linda	C.3-5	4	(1)	None	N/A	N/A
Bacon, Bert R.	None	N/A	N/A	E.3-33	4, 5, 12, 16ad, 20, 21g	(1)
Baepler, D. H.	None	N/A	N/A	E.3-3	4, 21f	(1)
Baier, Donna M.	None	N/A	N/A	E.3-33	4, 5, 12, 16ad, 20, 21g	(1)
Bakeman, John	C.3-5	4, 21	(1)	None	N/A	N/A
Baker, Eloise	C.3-6	3a, 4, 10c, 21	(1)	None	N/A	N/A
Baker, M. L.	C.3-232	3a, 8d, 21ef	(1)	None	N/A	N/A
Banines, Gretchen	C.3-124	4, 16b	(1)	None	N/A	N/A
Barbuck, Walter	C.3-6	4, 8bde, 14c, 21f	(1)	None	N/A	N/A
Bard, Jay	C.3-124	4, 16b	(1)	None	N/A	N/A
Barker, C. O., Jr.	C.3-6	4, 21, 21bef	(1)	None	N/A	N/A
Barnes, Charlotte A.	C.3-7	4, 8d, 19a, 20, 21, 21f	(1)	None	N/A	N/A
Barnes, T. D.	None	N/A	N/A	E.3-34	4, 5, 12, 16ad, 20, 21g	(1)
Bartholomew, June R.	C.3-7	4, 10d	(1)	None	N/A	N/A
Baty, Roger M., Ph.D.	C.3-8	1a, 3a, 8ad	(1)	None	N/A	N/A
Batz, Kim	C.3-215	4, 16b	(1)	None	N/A	N/A
Becher, Arlene K.	C.3-8	8a, 21fc	(1)	None	N/A	N/A
Beer, Ben	None	N/A	N/A	E.3-34	4, 5, 12, 16ad, 20, 21g	(1)

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Bell, Chuck	C.3-9	16, 8bcd	4.4.1	None	N/A	N/A
Bell, Donald	C.3-9	4,16a	(1)	E.3-5	4,19,21	(1)
Bennison, Majorie H.	C.3-10	4, 8e, 10a, 21f	(1)	None	N/A	N/A
Benson, Dennis/Mary	None	N/A	N/A	E.3-35	4, 5, 12, 16ad, 20, 21g	(1)
Benson, Mary	C.3-11	4, 16a, 19, 21	(1)	None	N/A	N/A
Bettencourt, Kristen	D.1-22	8, 21, 21bf	(1)	None	N/A	N/A
The Benson Family	None	N/A	N/A	E.3-4	16a, 19, 21	(1)
Billinger, Robert D.	C.3-11	21, 21f, 8e, 15d	(1)	None	N/A	N/A
Blackmer, Daniel	C.3-12	4,16a	(1)	None	N/A	N/A
Blain, Richard/Valerie	C.3-12	4, 8d, 10a, 21bf	(1)	None	N/A	N/A
Blakely, Larry/Ruth	C.3-13	3a, 4, 10a, 21	(1)	None	N/A	N/A
Blomgren, Bruce/Vickie	C.3-13	4, 8e, 10a, 21bcf	(1)	None	N/A	N/A
Boggs, Marilyn	C.3-215	4, 16b	(1)	None	N/A	N/A
Bokich, John C.	C.3-14	2, 4, 8, 15, 16a, 17, 21	(1)	None	N/A	N/A
Bolton, Mike	None	N/A	N/A	E.3-35	4, 5, 12, 16ad, 20, 21g	(1)
Book, Margaret	C.3-15	4, 8e, 21e	(1)	None	N/A	N/A
Boor, Carolyn	C.3-16	1d, 3a, 8e	(1)	None	N/A	N/A
Booth, Howard	D.3-16	3a, 8de, 10a, 20, 21bf	(1)	None	N/A	N/A
Borza, Jim	C.3-16	4, 16a	(1)	None	N/A	N/A
Boulton, Barry	C.3-17	3a, 8d, 21ef	(1)	None	N/A	N/A
Bradley, Howard	None	N/A	N/A	E.3-36	4, 5, 12, 16ad, 20, 21g	(1)
Bradley, Rebecca	None	N/A	N/A	E.3-36	4, 5, 12, 16ad, 20, 21g	(1)
Brady, Laura/Frank	C.3-17	3a	(1)	None	N/A	N/A
Breheny, Jean	C.3-18	3a, 4, 4a, 8cde, 10a, 21	4.4.1	None	N/A	N/A
Briner, M. D.	None	N/A	N/A	E.3-37	4, 5, 12, 16ad, 20, 21g	(1)
Briner, Michael	None	N/A	N/A	E.3-37	4, 5, 12, 16ad, 20, 21g	(1)
Brinson, J.	C.3-216	4, 16b	(1)	None	N/A	N/A
Broiles, Mr./Mrs. E. L.	C.3-18	4, 10a, 21bcf	(1)	None	N/A	N/A
Brown, Betty	None	N/A	N/A	E.3-38	4, 5, 12, 16ad, 20, 21g	(1)
Brown, David P.	C.3-19	4	(1)	None	N/A	N/A
Brown, Don	C.3-19	4	(1)	None	N/A	N/A
Brown, Myrtle G.	C.3-20	4,8a, 16a, 17, 19	(1)	None	N/A	N/A
Brown, Nicholas/Gertrude/David	C.3-20	1d, 4, 8e, 21c	(1)	None	N/A	N/A
Brown, Stan/Cheryll	C.3-21	21fgh	(1)	None	N/A	N/A

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Bruce, Connie	C.3-21	4,8e	(1)	None	N/A	N/A
Burford, Anne M.	None	N/A	N/A	E.3-38	4, 5, 12, 16ad, 20, 21g	(1)
Burk, Joyce	C.3-22 D.2-6	3a, 8d, 10a, 21fh	(1)	None	N/A	N/A
Burnham, Jeremy R.	C.3-23	4, 8e, 14c	(1)	None	N/A	N/A
Busch, Henry L.	None	N/A	N/A	E.3-29	4, 5, 12, 16ad, 20, 21g	(1)
Butora, Phil P.	None	N/A	N/A	E.3-39	4, 5, 12, 16ad, 20, 21g	(1)
Campbell, Jim	D.2-10	8b, 15	(1)	None	N/A	N/A
Campbell, Rena	C.3-216	4 16b	(1)	None	N/A	N/A
Cannarella, Karen	D.1-19	4	(1)	None	N/A	N/A
Capps, Richard C.	None	N/A	N/A	E.3-40	4, 5, 12, 16ad, 20, 21g	(1)
Carl, Darla	C.3-23	4	(1)	None	N/A	N/A
Casanova, Mary L.	C.3-232	3a, 8d, 21ef	(1)	None	N/A	N/A
Chapman, Patricia M.	C.3-24	4, 8ad, 15, 21bcf	(1)	None	N/A	N/A
Childress, Pamela	C.3-217	4, 16b	(1)	None	N/A	N/A
Childs, Frank M.	C.3-25	4, 16a	(1)	E.3-5	14f, 18b, 21, 21f	(1)
Childs, Helen C.	C.3-25	1d, 3a, 8de, 21cf	(1)	None	N/A	N/A
Christman, J. L.	C.3-26	1a, 4, 16a	(1)	None	N/A	N/A
Clark, Margaret D.	C.3-27	8d, 21ef	(1)	None	N/A	N/A
Clarke, P.	C.3-28	3a, 15, 213	(1)	None	N/A	N/A
Clayton, James	D.2-16	1c, 2, 8e, 19, 21	(1)	None	N/A	N/A
Clements, Richard F.	C.3-28	3a, 4a, 8d, 21ef	(1)	None	N/A	N/A
Cline, Norman C.	C.3-232	3a, 8d, 21ef	(1)	None	N/A	N/A
Clontz, Chuck	None	N/A	N/A	E.3-40	4, 5, 12, 16ad, 20, 21g	(1)
Cohen, Phillipe S., Ph.D.	C.3-29	1d, 8cd, 10d, 14ace, 15b, 21bcefh	4.4.1	None	N/A	N/A
Coleman, William J.	C.3-31	1a, 8ce, 9d, 18b, 20, 21	(1)	None	N/A	N/A
Collatz, Gene P.	None	N/A	N/A	E.3-41	4, 5, 12, 16ad, 20, 21g	(1)
Colton, Gale	None	N/A	N/A	E.3-41	4, 5, 12, 16ad, 20, 21g	(1)
Coon, Russell	None	N/A	N/A	E.3-6	4, 21f	(1)
Coony, Frank	D.1-19	16a	(1)	None	N/A	N/A
Corcoran, Grace A.	C.3-31	3a, 4, 8d, 21ef	(1)	None	N/A	N/A
Corpany, Vivian	None	N/A	N/A	E.3-42	4, 5, 12, 16ad, 20, 21g	(1)
Coslowsky, Fr.	C.3-32	15d	(1)	None	N/A	N/A
Covy, Joyce A.	C.3-33	3a	(1)	None	N/A	N/A

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Craig, Robert L.	C.3-32	4, 16a	(1)	None	N/A	N/A
Crites, Donald	C.3-34	4	(1)	E.3-7	4	(1)
Criss, Karen	C.3-217	4, 16b	(1)	None	N/A	N/A
Crist, Mark B.	C.3-34	3a, 4, 10a	(1)	None	N/A	N/A
Crommelin, Jacques	C.3-35	4, 8d, 21e	(1)	None	N/A	N/A
Crouse, Russell H.	D.1-4	1a, 4, 8bd	(1)	E.3-42	4, 5, 12, 16ad, 20, 21g	(1)
Crow, Dayl E.	None	N/A	N/A	E.3-43	4, 5, 12, 16ad, 20, 21g	(1)
Cuadras, David	C.3-35	4, 9d, 21cf	(1)	None	N/A	N/A
Czajkowski, George S.	None	N/A	N/A	E.3-43	4, 5, 12, 16ad, 20, 21g	(1)
Dabé, Mary	C.3-36	4	(1)	None	N/A	N/A
Daffer, Becky	C.3-36	4, 16a, 21	(1)	None	N/A	N/A
Damler, Mike S.	C.3-218	4, 16b	(1)	None	N/A	N/A
Darby, Priscilla S.	C.3-37	3a, 4a, 8e, 10a, 15, 19a, 21	(1)	None	N/A	N/A
Darling, Toni	C.3-37	4	(1)	None	N/A	N/A
Davies, Llewellyn	C.3-39	3a, 4, 8d	(1)	None	N/A	N/A
Davis, Joellen G.	C.3-38	3a, 4, 8e, 21cef	(1)	None	N/A	N/A
Dear, Kathy	C.3-39	4, 16a	(1)	None	N/A	N/A
Deisher, Kevin	D.3-10	4, 16a	(1)	None	N/A	N/A
Dexter, Madeline	D.1-30	15, 19, 21	(1)	None	N/A	N/A
Dils, Darleen	C.3-40	4, 9d, 21, 21cf	(1)	E.3-7	1b, 4	(1)
Dils, Harold	None	N/A	N/A	E.3-8	4	(1)
Distefano, K.	C.3-40	4, 8d, 10a, 21b	(1)	None	N/A	N/A
Dixon, Jane	C.3-41	8ae, 21fc	(1)	None	N/A	N/A
Dodge, William Thomas	None	N/A	N/A	E.3-44	4, 5, 12, 16ad, 20, 21g	(1)
Dondero, Jerry	None	N/A	N/A	E.3-44	4, 5, 12, 16ad, 20, 21g	(1)
Dougherty, Mike	C.3-43	4	(1)	E.3-8	4, 15, 16a	(1)
Driscoll, Shawn	C.1-5	20	(1)	None	N/A	N/A
Dunkerley, Mike	C.3-42	4	(1)	None	N/A	N/A
Duval, Kathy	C.3-43	4, 8d, 10a, 21f	(1)	None	N/A	N/A
Dwyer, Charles E.	C.3-44	4	(1)	None	N/A	N/A
Dye, Mary-Lynne	C.3-44	4, 8e, 21bf	(1)	None	N/A	N/A
Dyer, Janet	None	N/A	N/A	E.3-45	4, 5, 12, 16ad, 20, 21g	(1)
Elliott, William J.	C.3-45	4	(1)	E.3-9	4	(1)
Ellworth, Merry	C.3-218	4, 16b	(1)	None	N/A	N/A
Eloon, Russell	C.3-45	4	(1)	None	N/A	N/A
Ely II, Marion F.	C.3-46 D.2-15	1cde, 12, 21, 21ceh	4.4.1	None	N/A	N/A

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	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/ EIR Section)	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/ EIR Section)
Engman, Mrs. Charles	C.3-47	4, 8d, 21f	(1)	None	N/A	N/A
Epstein, Beth	C.3-47	1ad, 4, 8ab	(1)	None	N/A	N/A
Erickson, Mr. and Mrs. E.	None	N/A	N/A	E.3-45	4, 5, 12, 16ad, 20, 21g	(1)
Ervin, Henry N.	C.3-49	3a, 8bd, 10a, 21ef	(1)	None	N/A	N/A
Erwin, Cash	None	N/A	N/A	E.3-46	4, 5, 12, 16ad, 20, 21g	(1)
Evart, Doris/Howard	C.3-48	1d, 4, 9cd, 16a, 21	(1)	None	N/A	N/A
Evers, Jon	C.3-50	4	(1)	None	N/A	N/A
Feir, Milton/Dorothy	C.3-52	3a, 21ef	(1)	None	N/A	N/A
Fiddler, Richard	C.3-50	8bd, 14c, 21, 21f	(1)	None	N/A	N/A
Fischer, Verlis L.	None	N/A	N/A	E.3-46	4, 5, 12, 16ad, 20, 21g	(1)
Flats, Alkali	C.3-51	1a, 3a, 8bd, 10a, 15a, 19, 20, 21bf	(1)	None	N/A	N/A
Floyd, Bill	C.3-52	3a, 8d, 14c	(1)	None	N/A	N/A
Foreman, Dave	C.3-53	4	(1)	None	N/A	N/A
Forgey, Betty	C.3-53 D.2-5	1b, 3a, 4a, 12, 21, 21fg	4.4.1	None	N/A	N/A
Foster, Hazel M.	C.3-232	3a, 8d, 21ef	(1)	None	N/A	N/A
Freeman, Gerald W.	C.3-54 D.2-4	1a, 8de, 14e, 18b, 21f	4.4.1	E.3-10	4	(1)
Freiwald, Ray	C.3-56	10a, 21bf	(1)	None	N/A	N/A
Freter, John M.	C.3-56	1a, 14c, 15b	(1)	None	N/A	N/A
Furrr, William D.	None	N/A	N/A	E.3-47	4, 5, 12, 16ad, 20, 21g	(1)
Galing, Bruce H.	C.3-58	12, 21bg	4.4.1	None	N/A	N/A
Gayton, Faustino	C.3-219	4, 16b	(1)	None	N/A	N/A
Gayton, Terry	C.3-219	4, 16b	(1)	None	N/A	N/A
Gibbons, Herbert E.	C.3-62	4, 18c, 21		E.3-10	4, 16a	
Giddings, Earl R.	C.3-63 D.1-6	3a, 4, 10a, 20, 21bcf	(1)	None	N/A	N/A
Giddings, Lloyd A.	C.3-63	4, 10a, 21bf	(1)	None	N/A	N/A
Gifford, Kitty	C.3-64	14c, 19a, 20, 21f	(1)	None	N/A	N/A
Glass, Rosemary	C.3-64	3a, 18c, 21e	(1)	None	N/A	N/A
Goldenberg, Douglas M.	C.3-233	3a, 8d, 21ef	(1)	None	N/A	N/A
Goldenberg, Toni	C.3-233	3a, 8d, 21ef	(1)	None	N/A	N/A
Gonzalez, Alex E.	C.3-65	4	(1)	E.3-11	16, 5c, 21	(1)
Goode, Leon T.	None	N/A	N/A	E.3-47	4, 5, 12, 16ad, 20, 21g	(1)
Gordon, Phillip	C.3-65	8de, 14c, 19, 21, 21f	(1)	None	N/A	N/A
Graham, Angelique	C.3-66	4, 16ac	(1)	None	N/A	N/A

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**LIST OF COMMENTERS AND INDEX TO RESPONSES**  
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Grams, Jack C.	C.3-233	3a, 8d, 21ef	(1)	None	N/A	N/A
Gray, Angel S.	None	N/A	N/A	E.3-48	4, 5, 12, 16ad, 20, 21g	(1)
Gray, Dan	C.3-66	4, 16a	(1)	None	N/A	N/A
Green, Leslie	C.3-67	8a, 21e	(1)	None	N/A	N/A
Gregory, Maria	C.3-67	1a, 3a, 8ad, 21bcf	(1)	None	N/A	N/A
Griffith, Addie	None	N/A	N/A	E.3-48	4, 5, 12, 16ad, 20, 21g	(1)
Griffith, Stephen A.	None	N/A	N/A	E.3-49	4, 5, 12, 16ad, 20, 21g	(1)
Grizzle, Judy	C.3-68	3a, 8ac, 15a, 21bcf	(1)	None	N/A	N/A
Groh, Garland R. "Jake"	C.3-68	4	(1)	E.3-11	4	(1)
Gross, B. & F.	C.3-69	4, 10a, 14c	(1)	None	N/A	N/A
Gross, Donald	D.2-9	1ce	(1)	None	N/A	N/A
Gunger, Darla	C.3-69	4	(1)	None	N/A	N/A
Gylord, Sam D.	C.3-233	3a, 8d, 21ef	(1)	None	N/A	N/A
Hague, George	C.3-70	1bd, 3, 4, 6, 8bcde, 14c, 15df, 16a	4.4.1	None	N/A	N/A
Hagum, Gertude A.	C.3-71	3a, 8d, 21ef	(1)	None	N/A	N/A
Hahn, Del	C.3-72	3a, 4, 8e, 20, 21, 21f	(1)	None	N/A	N/A
Hahn, Heather	D.2-13	4, 14c, 21f	(1)	E.3-12	2, 4, 8de, 10a, 18b, 19, 21fg	4.4.2
Hall, Garry R.	None	N/A	N/A	E.3-49	4, 5, 12, 16ad, 20, 21g	(1)
Hall, Heidi	C.3-73	8d, 21, 21f	(1)	None	N/A	N/A
Hanes, Ruth M.	C.3-74	4, 8e, 14c, 19, 21	(1)	None	N/A	N/A
Harper, George L.	C.3-74	3a, 8ade, 20, 21e	(1)	None	N/A	N/A
Harrington, Karen	None	N/A	N/A	E.3-50	4, 5, 12, 16ad, 20, 21g	(1)
Harris, Mack	None	N/A	N/A	E.3-50	4, 5, 12, 16ad, 20, 21g	(1)
Hart, Albert J.	None	N/A	N/A	E.3-51	4, 5, 12, 16ad, 20, 21g	(1)
Hart, Luella D.	None	N/A	N/A	E.3-51	4, 5, 12, 16ad, 20, 21g	(1)
Hart, Veva F.	C.3-75	3a, 4, 8e, 21e	(1)	None	N/A	N/A
Hart, Walter D., Ph.D.	C.3-75	3a, 4	(1)	None	N/A	N/A
Harte, Dorothy	C.3-76 C.3-79	1a, 2b, 3, 4a, 8cde, 10ac, 14d, 16ad, 21f, 22b	4.4.1	None	N/A	N/A
Hartin, Pete and Evelyn	None	N/A	N/A	E.3-52	4, 5, 12, 16ad, 20, 21g	(1)

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Hartley, Michael J.	None	N/A	N/A	E.3-13	4, 14f, 18b, 21f	(1)
Harvey, Dave	C.3-78	8d, 21ef	(1)	None	N/A	N/A
Hawkins, Cole C.	C.3-79	8d, 21, 21e	(1)	None	N/A	N/A
Hawkins, Ira, Mrs.	C.3-81	4, 8d, 21ef	(1)	None	N/A	N/A
Hawley, Steve	C.3-80	4, 16a	(1)	None	N/A	N/A
Heimdahl, Mrs. Ralph	C.3-81	4, 8d	(1)	None	N/A	N/A
Henry, Mary Ann	C.3-82	3a, 8de, 21e	(1)	None	N/A	N/A
Hickman, Robert M.	C.3-82	4, 16a	(1)	None	N/A	N/A
Hickman, Sue	D.2-5	4	(1)	None	N/A	N/A
Hiestand, Karthyn/Miller, Neal	C.3-83	4, 8e, 10a, 19, 21, 21bf	(1)	None	N/A	N/A
Hill, Jennifer	C.3-83	4, 16a, 21	(1)	None	N/A	N/A
Hill, Marquinta/Reginald	C.3-84	4, 8a, 10a, 21e	(1)	None	N/A	N/A
Hill, Melvin	D.2-18	15	(1)	None	N/A	N/A
Hines, Fred	D.3-15	8ae, 17a	(1)	None	N/A	N/A
Holbert, Wanda	C.3-84	4, 16a, 21, 21f	(1)	None	N/A	N/A
Hood, Diane	D.1-30	8ae, 15, 19, 21	(1)	None	N/A	N/A
Homer, Brett	C.3-85	4, 8d, 10a, 21bf	(1)	None	N/A	N/A
Horwitz, Mark H.	C.3-85	1a, 4	(1)	None	N/A	N/A
Horwitz, Mrs. Mark	C.3-86	4, 16a, 20, 21	(1)	None	N/A	N/A
Hostetler, Traci	C.3-86	4, 10a, 21, 21f	(1)	None	N/A	N/A
Hummond, Mareen	C.3-220	4, 16a	(1)	None	N/A	N/A
Hummond, Stanley	C.3-220	4, 16a	(1)	None	N/A	N/A
Hunt, Rachael	C.3-87	8d, 21bf	(1)	None	N/A	N/A
Huskinson, Ed Jr.	None	N/A	N/A	E.3-52	4, 5, 12, 16ad, 20, 21g	(1)
Irwin, Wayne	D.3-17	16ab	(1)	None	N/A	N/A
Jacks, J. B.	C.3-87	4	(1)	None	N/A	N/A
Jackson, Ann	C.3-221	4, 16a	(1)	None	N/A	N/A
Jackson, James Allen	C.3-88	4, 10c	(1)	None	N/A	N/A
Jacob, Michael	None	N/A	N/A	E.3-14	4	(1)
Jacobson, Carolyn	C.3-221	4, 16a	(1)	None	N/A	N/A
Jacobson, Shelly	C.3-222	4, 16a	(1)	None	N/A	N/A
Jaeg, Richard	C.3-89	4, 21hj	(1)	None	N/A	N/A
Janz, Helen M.	None	N/A	N/A	E.3-53	4, 5, 12, 16ad, 20, 21g	(1)
Janz, Fredrick A.	C.3-90	4, 16a	(1)	E.3-53	4, 5, 12, 16ad, 20, 21g	(1)
Jenkins, Bud	C.3-222	4, 16a	(1)	None	N/A	N/A
Jensen, Jane S.	C.3-223	4, 16a	(1)	None	N/A	N/A
Jimenez, Cynthia	C.3-223	4, 16a	(1)	None	N/A	N/A
Johnson, Ellen F.	C.3-90	4, 16a	(1)	E.3-54	4, 5, 12, 16ad, 20, 21g	(1)

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Johnson, Lesli	None	N/A	N/A	E.3-14	4	(1)
Johnson, Penny	C.3-91	4	(1)	E.3-15	4, 21f	(1)
Johnson, Richard/Delores M.	None	N/A	N/A	E.3-54	4, 5, 12, 16ad, 20, 21g	(1)
Johnson, Susan	C.3-91	4, 8de, 15, 21cef	(1)	None	N/A	N/A
Jones, Keith	None	N/A	N/A	E.3-55	4, 5, 12, 16ad, 20, 21g	(1)
Kalivoda, Jeannie	C.3-92	4	(1)	None	N/A	N/A
Kaplan, O. Benjamin, Ph.D.	C.3-92	4, 15, 21	(1)	None	N/A	N/A
Kaschke, N. L.	C.3-93	4, 16a	(1)	None	N/A	N/A
Kaufman, Betty	C.3-93	4, 5, 8abde, 18b, 19, 21e	(1)	None	N/A	N/A
Kay, Ella C.	None	N/A	N/A	E.3-55	4, 5, 12, 16ad, 20, 21g	(1)
Keeling, Jim	None	N/A	N/A	E.3-56	4, 5, 12, 16ad, 20, 21g	(1)
Keller, R.M./Eva L.	C.3-95	4, 8de, 21bef	(1)	None	N/A	N/A
Kelley, Al	D.1-15	16a, 21	(1)	None	N/A	N/A
Kennedy, Harold D., III	C.3-96	4	(1)	None	N/A	N/A
Kent, Elaine/Doug	C.3-94	8d, 10a, 18c, 20, 21	(1)	E.3-15	14f, 21f	4.4.2
Kidd, Denis	D.1-7	4, 8e	(1)	None	N/A	N/A
Kidwell, Nancy	None	N/A	N/A	E.3-56	4, 5, 12, 16ad, 20, 21g	(1)
Kimball, Donald W., Jr.	C.3-96	4, 10a	(1)	None	N/A	N/A
Kitz, Kevin	C.3-97	4, 8de, 10a, 21bef	(1)	None	N/A	N/A
Klingbiel, Iris M.	None	N/A	N/A	E.3-57	4, 5, 12, 16ad, 20, 21g	(1)
Kluth, Paul J.	C.3-98	3a, 4, 8d, 21ef	(1)	None	N/A	N/A
Knight, Betty J./Thomas H.	None	N/A	(1)	E.3-57	4, 5, 12, 16ad, 20, 21g	(1)
Koch, Margaret R.	C.3-98	4, 14c, 20, 21ef	(1)	None	N/A	N/A
Kraft, June A.	None	N/A	N/A	E.3-58	4, 5, 12, 16ad, 20, 21g	(1)
Kreissman, Bern	C.3-99	4, 21	(1)	None	N/A	N/A
Kristinat, Laurie	C.3-99	8d, 10a, 18b, 21bf	(1)	None	N/A	N/A
Krueger, Richard J.	None	N/A	N/A	E.3-58	4, 5, 12, 16ad, 20, 21g	(1)
Krueper, Alice	D.1-13	4	(1)	None	N/A	N/A
Kudscatey, John H.	C.3-100	4, 8d, 10a, 21fg	(1)	None	N/A	N/A
Kuivinen, James R.	C.3-100	3a, 4a, 8ae, 15, 21	(1)	None	N/A	N/A
Lae, Louise	C.3-101	4	(1)	None	N/A	N/A

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Lamar, Donald L.	C.3-101	4	(1)	None	N/A	N/A
Lamkins, Carol	None	N/A	N/A	E.3-59	4, 5, 12, 16ad, 20, 21g	(1)
Lamond, Robert S.	C.3-102	8de, 10a, 14c, 15b, 21, 21f	(1)	None	N/A	N/A
Lang, Roxanne	C.3-102	1a, 16a	(1)	E.3-16	4, 16a	(1)
Langeft, Aurelie	C.3-103	8d, 20, 21f	(1)	None	N/A	N/A
LaRue, B.	C.3-103	4	(1)	None	N/A	N/A
Lau, Sami	C.3-105	3a, 14c, 15, 21ef	(1)	None	N/A	N/A
Laula, Mr. & Mrs.	C.3-224	4, 16a	(1)	None	N/A	N/A
Lawson, Jan	C.3-104	1a, 8e, 19, 20, 21, 21e	(1)	None	N/A	N/A
Leach, George C.	None	N/A	N/A	E.3-59	4, 5, 12, 16ad, 20, 21g	(1)
Lehman, Steve/Judy	C.3-105	8ad, 10a, 21, 21bf	(1)	None	N/A	N/A
Lehmann, Jim	C.3-106	2b, 8a, 9c, 14cef, 21e	4.4.1	None	N/A	N/A
Lett, John	C.3-109	4	(1)	E.3-16	4	(1)
Laurie, Bob	C.3-224	4, 16b	(1)	None	N/A	N/A
Laurie, Mona	C.3-225	4, 16b	(1)	None	N/A	N/A
Lever, Elizabeth Sherwood	C.3-107	8ad, 10, 16a, 20, 21	(1)	None	N/A	N/A
Lindberg, Gordon A.	C.3-234	3a, 8d, 21ef	(1)	None	N/A	N/A
Linder, Harold	None	N/A	N/A	E.3-60	4, 5, 12, 16ad, 20, 21g	(1)
Lindgren, Phillip & Family	D.1-19	4, 8de, 10ac, 21bf	(1)	None	N/A	N/A
Livermore, Don	None	N/A	N/A	E.3-60	4, 5, 12, 16ad, 20, 21g	(1)
Lopez, Junto	C.3-225	4, 16b	(1)	None	N/A	N/A
Lopreore, Raye	None	N/A	N/A	E.3-61	4, 5, 12, 16ad, 20, 21g	(1)
Mach, Susan	C.3-109	8ad, 10a, 21, 21bf	(1)	None	N/A	N/A
Macheski, Ann	C.3-110	3a, 8d, 14c, 15, 18c, 21ef	(1)	None	N/A	N/A
Mains, Steven E.	C.3-110	1a	(1)	None	N/A	N/A
Major, Chris	C.3-112	4	(1)	E.3-17	4, 14f, 21f	(1)
Manning, John C.	C.3-111	1a, 8abce, 17a	4.4.1	E.3-17	4, 21f	(1)
Marak, Donna	C.3-112	4, 16a	(1)	None	N/A	N/A
Maria, Bill	C.3-226	4, 16b	(1)	None	N/A	N/A
Markofski, Vincent	C.3-113	4	(1)	None	N/A	N/A
Martin, R.N. (Bob)	C.3-113	4	(1)	E.3-18	4, 12	(1)
Martini, Kay	C.3-114	4, 10a	(1)	None	N/A	N/A

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Mason, Robert	C.3-114	4, 8d, 10c	(1)	None	N/A	N/A
Mayhew, Corinne H./Wilbur W.	C.3-115	8e, 14c, 21, 21eg	(1)	None	N/A	N/A
McAndrews, Thomas W.	C.3-115	4, 21, 21c	(1)	None	N/A	N/A
McCall, Hugh L.	C.3-117	4	(1)	None	N/A	N/A
McCollum, Edna	D.1-25	4, 8, 19, 21	(1)	None	N/A	N/A
McKee, Karen	C.3-116	1b, 8abde, 10, 10ac, 15d, 19a, 20, 21bfg	4.4.1	None	N/A	N/A
McKibben, Michael A., Ph.D.	C.3-118	8b, 14c, 19, 21	(1)	None	N/A	N/A
McNamara, Margaret	C.3-118 D.1-13	4, 15, 21bcf	(1)	None	N/A	N/A
McWilliams, Carl	D.1-4	16a	(1)	None	N/A	N/A
Mead, Christine	C.3-119	8de, 14c, 20, 21f	(1)	None	N/A	N/A
Medleck, Stella	C.3-226	4, 16b	(1)	None	N/A	N/A
Meury, Sara	C.3-119	1a, 3a, 4, 8e, 15, 21cf	(1)	None	N/A	N/A
Meyer, B. Dale	None	N/A	N/A	E.3-61	4, 5, 12, 16ad, 20, 21g	(1)
Meyer, Kirsten	C.3-120	8d, 10a, 21bf	(1)	None	N/A	N/A
Meyer, Louis	None	N/A	N/A	E.3-62	4, 5, 12, 16ad, 20, 21g	(1)
Meyer, Tony	C.3-120	4	(1)	None	N/A	N/A
Miles, Larry/Pearl	C.3-121	3a, 15, 21f	(1)	None	N/A	N/A
Miller, Barnus	C.3-121	4	(1)	None	N/A	N/A
Miller, Carol M.	C.3-234	3a, 8d, 21ef	(1)	None	N/A	N/A
Miller, Richard	C.3-122	3a, 8d, 21ef	(1)	None	N/A	N/A
Mitchell, Patrick G.	None	N/A	N/A	E.3-18	4, 12, 16a	(1)
Mollenhour, Nancy Dawn	C.3-123	4, 10a, 21	(1)	None	N/A	N/A
Moller, Carol	C.3-122	4, 8d	(1)	None	N/A	N/A
Momor, Josephine	C.3-124	8bde, 12, 15, 21, 21c	(1)	None	N/A	N/A
Monteith, Cherrella	C.3-124	4, 16a	(1)	None	N/A	N/A
Moon, Dale	C.3-125	4	(1)	None	N/A	N/A
Morely, Simon, Ph.D.	C.3-126	1a, 3a, 10a, 15d	(1)	None	N/A	N/A
Morgan, Laura	C.3-125	4, 16a	(1)	None	N/A	N/A
Morton, P. K.	C.3-127	4, 16a	(1)	None	N/A	N/A
Moser, L. J.	C.3-127	4, 8d, 21bfg	(1)	None	N/A	N/A
Moynier, Al/Fran	C.3-128	4	(1)	None	N/A	N/A
Mueller, Lady Jill	C.3-234	3a, 8d, 21ef	(1)	None	N/A	N/A
Muench, Robert A.	C.3-128	4	(1)	None	N/A	N/A
Mul, Janalee	C.3-234	3a, 8d, 21ef	(1)	None	N/A	N/A
Mulqueen, Stephen	C.3-129	4, 15, 21g	(1)	E.3-19	4	(1)

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COMMENTS	DRAFT EIS/EIR			SUPPLEMENT		
	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/ EIR Section)	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/ EIR Section)
Murphy, Katera	None	N/A	N/A	E.3-62	4, 5, 12, 16ad, 20, 21g	(1)
Murphy, Stanley E.	C.3-129	3a, 10ac, 21e	(1)	None	N/A	N/A
Myers, Thomas J.	C.3-130	2d, 8bd, 10a, 14c, 17a	4.4.1	None	N/A	N/A
Nance, Troy	D.3-10	14c, 15	(1)	None	N/A	N/A
Neale, J. S.	D.2-9	15	(1)	None	N/A	N/A
Newell, Carol	C.3-131	4, 16a	(1)	None	N/A	N/A
Newell, Jack	C.3-132	4, 8d, 16a	(1)	E.3-19	10d, 16a	(1)
Nichols, John R.	C.3-132	4, 16a	(1)	None	N/A	N/A
Nichols, Norman M.	C.3-133	4, 10	(1)	None	N/A	N/A
Nizzi, Davis A.	None	N/A	N/A	E.3-63	4, 5, 12, 16ad, 20, 21g	(1)
Nyboer, Jean	C.3-225	3a, 8d, 21ef	(1)	None	N/A	N/A
O'Brien, Arthur	C.3-227	4, 16b	(1)	None	N/A	N/A
O'Brien, William L.	C.3-134	10c, 15d, 8a, 21cfg	(1)	None	N/A	N/A
Odermatt, John R.	C.3-135	7, 8, 8b, 14c	4.4.1	None	N/A	N/A
O'Hara, Berenice A.	C.3-136	8d, 21, 21ef	(1)	None	N/A	N/A
O'Malley, Terence E.	C.3-136	3a, 8d, 10a, 21bf	(1)	None	N/A	N/A
Ostertag, George/Rhonda	C.3-137	4, 8de, 10a, 12	(1)	E.3-20	1a, 4, 8d, 14f, 15, 21f	4.4.2
Otten, Fred	C.3-138	4, 8d, 14c, 20	(1)	None	N/A	N/A
Overy, Jane	C.3-138	4, 16a	(1)	E.3-21	4	(1)
Paddock, Lilly	C.3-139	4, 14c, 21, 21f	(1)	None	N/A	N/A
Page, Robert H.	C.3-139	1a, 15d, 20	(1)	E.3-21	4, 12	(1)
Paige, Raymond J./Patricia C.	C.3-140	4	(1)	None	N/A	N/A
Palmer, Mary	C.3-235	3a, 8d, 21ef	(1)	None	N/A	N/A
Papp, Joanne	C.3-235	3a, 8d, 21edf	(1)	None	N/A	N/A
Parker, June	C.3-140	4, 16a	(1)	E.3-22	4	(1)
Passmore, Truman	C.3-141	4	(1)	None	N/A	N/A
Patrone, Rosalind A.	C.3-141	3a	(1)	None	N/A	N/A
Pavlik, Bruce M., Ph.D.	C.3-142	1a, 15bd	4.4.1	None	N/A	N/A
Payne, C. Marshall	C.3-146	8cde	(1)	None	N/A	N/A
Pelka, Greg	C.3-147	1a, 4, 21f	(1)	None	N/A	N/A
Pelton, Katherine	C.3-235	3a, 8d, 21ef	(1)	None	N/A	N/A
Peters, Holme	D.1-12	18b, 21fi	(1)	None	N/A	N/A
Peters, Holme/Leathers, Valerie	C.3-148	3a, 8de, 10ac, 16a, 18c, 21, 21efg	4.4.1	None	N/A	N/A
Petersen, Vickie L.	C.3-147	4, 16a	(1)	None	N/A	N/A
Petrack, Albert J.	C.3-149	4	(1)	None	N/A	N/A

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**LIST OF COMMENTERS AND INDEX TO RESPONSES**  
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Pidrey, Roger W.	C.3-149	4	(1)	None	N/A	N/A
Pierpoint, Alan	C.3-150	4, 8de, 10c, 14c, 21fg	(1)	None	N/A	N/A
Plummer, Marlene	C.3-150	4	(1)	None	N/A	N/A
Plummer, Robert J.	C.3-151	3a, 8cde, 14c, 21e	(1)	None	N/A	N/A
Pluss, Linda G.	C.3-151	4, 8d, 21, 21f	(1)	None	N/A	N/A
Polburn, William J.	C.3-153	4, 16a	(1)	None	N/A	N/A
Polcyn, Dr. David M.	C.3-152 D.1-29	1d, 3a, 8cde, 15b, 21f	4.4.1	None	N/A	N/A
Poss, Jim	D.1-31	3a, 8abd	(1)	None	N/A	N/A
Powell, Ray G./Mary J.	C.3-153	4, 16a	(1)	None	N/A	N/A
Powell, Suzan	C.3-154	4, 16a	(1)	None	N/A	N/A
Price, Alan L.	C.3-154	1a, 4, 16a	(1)	None	N/A	N/A
Priest, Charles Roy	None	N/A	N/A	E.3-63	4, 5, 12, 16ad, 20, 21g	(1)
Pritchard, Glenn	C.3-155	4, 16a	(1)	None	N/A	N/A
Pritchard, Patricia	C.3-155	4, 16a	(1)	None	N/A	N/A
Pusser, Gordon	C.3-156	4	(1)	None	N/A	N/A
Quevedo, Edith S.	C.3-157	8e, 10a, 21, 21bcf	(1)	None	N/A	N/A
Quillman, Susan	D.1-16	4, 10c, 14c	(1)	None	N/A	N/A
Ragsdale, Richard	C.3-227	4, 16b	(1)	None	N/A	N/A
Randel, Tom	C.3-156	4, 8de, 21e	(1)	None	N/A	N/A
Raschle, Lynn	C.3-157	4	(1)	None	N/A	N/A
Rasmussen, Pam	C.3-158	4	(1)	None	N/A	N/A
Rausin, Michael	C.3-158	4, 10a, 21bf	(1)	None	N/A	N/A
Rawson, Raymond D.	None	N/A	N/A	E.3-64	4, 5, 12, 16ad, 20, 21g	(1)
Ray, Max E.	None	N/A	N/A	E.3-64	4, 5, 12, 16ad, 20, 21g	(1)
Read, Sally	D.1-16	2, 8, 10ac, 19, 20, 21	(1)	None	N/A	N/A
Regan, Barney	None	N/A	N/A	E.3-65	4, 5, 12, 16ad, 20, 21g	(1)
Reid, Mrs. John	C.3-159	4	(1)	None	N/A	N/A
Reim, Kenneth M.	C.3-159	1a, 4, 12, 16	(1)	None	N/A	N/A
Reinhart, Barbara A.	C.3-160	2, 4, 8c, 9d, 21	(1)	None	N/A	N/A
Rhodes, Verna Lynn	None	N/A	N/A	E.3-65	4, 5, 12, 16ad, 20, 21g	(1)
Rhone, Elizabeth	C.3-160	3a, 8d, 14c, 15, 20, 21ef	(1)	None	N/A	N/A
Richmond, James A.	None	N/A	N/A	E.3-66	4, 5, 12, 16ad, 20, 21g	(1)
Richmond, Jim	C.3-161	8d	(1)	None	N/A	N/A

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Rieser, Archie M., Sr.	C.3-163	15b	4.4.1	None	N/A	N/A
Rodriguez, Angel	None	N/A	N/A	E.3-66	4, 5, 12, 16ad, 20, 21g	(1)
Romerro, Lou	None	N/A	N/A	E.3-67	4, 5, 12, 16ad, 20, 21g	(1)
Romine, Joe	C.3-164	4, 16a	(1)	None	N/A	N/A
Romine, John	C.3-164	4, 16a	(1)	E.3-22	4, 12, 16a, 21f	(1)
Rood, Felice	C.3-165	3a, 8e, 21ef	(1)	None	N/A	N/A
Rose, Robert W.	C.3-165	4	(1)	None	N/A	N/A
Rosen, Daniel	C.3-166	4, 8d, 21	(1)	None	N/A	N/A
Rosine, Betty/Don	C.3-167	4, 10a, 21bf	(1)	None	N/A	N/A
Ross, Coreena A.	C.3-167	4, 18c	(1)	E.3-24	4	(1)
Rowe, Pat	C.3-228	4, 16b	(1)	None	N/A	N/A
Rudy, Tom	C.3-168	4	(1)	None	N/A	N/A
Runyan, Dottie	None	N/A	N/A	E.3-67	4, 5, 12, 16ad, 20, 21g	(1)
Runyan, Norman	None	N/A	N/A	E.3-68	4, 5, 12, 16ad, 20, 21g	(1)
Russ, Werner	C.3-168	4	(1)	None	N/A	N/A
Sack, Georges H.	None	N/A	N/A	E.3-68	4, 5, 12, 16ad, 20, 21g	(1)
Saint, Dr. Prem	D.1-27	8b	(1)	None	N/A	N/A
Salter, Ann	None	N/A	N/A	E.3-69	4, 5, 12, 16ad, 20, 21g	(1)
Sandquist, Ernest/Sandy	None	N/A	N/A	E.3-69	4, 5, 12, 16ad, 20, 21g	(1)
Savage, G. J.	None	N/A	N/A	E.3-70	4, 5, 12, 16ad, 20, 21g	(1)
Savage, Mary E.	None	N/A	N/A	E.3-70	4, 5, 12, 16ad, 20, 21g	(1)
Savage, William W.	C.3-169 D.1-5	1acdf, 3b, 10, 15af, 22c	4.4.1	None	N/A	N/A
Sayre, James K.	C.3-171	4, 8e, 10ac, 21e	(1)	None	N/A	N/A
Schaeffer, Kathleen	None	N/A	N/A	E.3-71	4, 5, 12, 16ad, 20, 21g	(1)
Schafer, Robert W.	C.3-171	4, 12, 16a	(1)	None	N/A	N/A
Schallhorn, Cecilia	None	N/A	N/A	E.3-71	4, 5, 12, 16ad, 20, 21g	(1)
Schallhorn, Jack	None	N/A	N/A	E.3-72	4, 5, 12, 16ad, 20, 21g	(1)
Scherba, Dr. Gerry	D.1-27	2, 15b, 18b, 21fh	(1)	None	N/A	N/A
Schnaidt, Margaret	C.3-172 D.1-13	4, 10a	(1)	None	N/A	N/A

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TABLE 2.2

**LIST OF COMMENTERS AND INDEX TO RESPONSES**  
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COMMENTER	DRAFT EIS/EIR			SUPPLEMENT		
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Schroeder, Ruthanne	C.3-172	14c, 15, 21	(1)	None	N/A	N/A
Schuman, Lawrence W.	None	N/A	N/A	E.3-72	4, 5, 12, 16ad, 20, 21g	(1)
Scott, Billy N.	None	N/A	N/A	E.3-24	4, 16a, 21f	(1)
Sedler, Dale Ralph	C.3-173	4, 8ad, 20, 21ef	(1)	None	N/A	N/A
Shoemaker, David J.	C.3-228	4, 16b	(1)	None	N/A	N/A
Shoemaker, Linda	C.3-229	4, 16b	(1)	None	N/A	N/A
Shuley, Marilyn/Sanford	C.3-174	4, 16a	(1)	None	N/A	N/A
Simpson, Shirley M.	C.3-175	3a, 4, 10c	(1)	None	N/A	N/A
Slavens, Ada	None	N/A	N/A	E.3-73	4, 5, 12, 16ad, 20, 21g	(1)
Smith, Mike L.	None	N/A	N/A	E.3-73	4, 5, 12, 16ad, 20, 21g	(1)
Smith, Ruth	C.3-236	3a, 8d, 21ef	(1)	None	N/A	N/A
Smith, Winifred L.	None	N/A	N/A	E.3-74	4, 5, 12, 16ad, 20, 21g	(1)
Sneatheu, Karl W.	C.3-176	4	(1)	None	N/A	N/A
Speicher, Hal	C.3-176	4	(1)	None	N/A	N/A
Spreng, Bill	C.3-177	4, 10a	(1)	None	N/A	N/A
Squier, Ellis H.	None	N/A	N/A	E.3-74	4, 5, 12, 16ad, 20, 21g	(1)
Standard, Norma	C.3-177	3a, 4, 8de, 10c	(1)	None	N/A	N/A
Stebbins, Joan	None	N/A	N/A	E.3-75	4, 5, 12, 16ad, 20, 21g	(1)
Steingold, Harold, Ph.D.	C.3-178	21e	(1)	E.3-25	4, 21, 21cf	(1)
Steinpress, Martin	C.3-179	4	(1)	None	N/A	N/A
Stewart, Julie	C.3-229	4, 16b	(1)	None	N/A	N/A
Stewart, Randy	C.3-230	4, 16b	(1)	None	N/A	N/A
Stewart, Walter H.	C.3-179	4	(1)	None	N/A	N/A
Strawn, Ann J.	C.3-180	8de, 20, 21bcf	(1)	None	N/A	N/A
Suskind, Howard	C.3-180 D.1-23	1f, 4, 10, 15	4.4.1	None	N/A	N/A
Sutter, Harold O.	None	N/A	N/A	E.3-75	4, 5, 12, 16ad, 20, 21g	(1)
Sutter, Wilda A.	None	N/A	N/A	E.3-76	4, 5, 12, 16ad, 20, 21g	(1)
Swanberg, Lee	C.3-181	4, 8de, 10ac, 21e	(1)	None	N/A	N/A
Swanson, John R.	C.3-181	4	(1)	E.3-25	4, 7, 8e	(1)
Sweeney, Phil W.	C.3-230	4, 16b	(1)	None	N/A	N/A
Sweeney, Dr. Robert E.	None	N/A	N/A	E.3-26	14f, 21f	(1)
Szabo, Mr. & Mrs. Michael	C.3-182	4, 21	(1)	None	N/A	N/A
Tabor, Steve	C.3-182	8e, 10c, 20, 21e	(1)	None	N/A	N/A
Teal, Roger A.	C.3-183	1bd, 8cd, 15ae, 21cf	(1)	None	N/A	N/A

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Teitsworth, June	C.3-185	3a, 4, 10c, 19, 21	(1)	None	N/A	N/A
Templeton, Anne C.	None	N/A	N/A	E.3-76	4, 5, 12, 16ad, 20, 21g	(1)
Templeton, L.	None	N/A	N/A	E.3-77	4, 5, 12, 16ad, 20, 21g	(1)
Thompson, Danny L.	None	N/A	N/A	E.3-77	4, 5, 12, 16ad, 20, 21g	(1)
Thornbrugh, Robert	C.3-186	4, 10, 16a	(1)	None	N/A	N/A
Thorson, Steven L.	C.3-186	4	(1)	None	N/A	N/A
Thweatt, Juanita	C.3-231	4, 16b	(1)	None	N/A	N/A
Tillman, Mary Margaret	None	N/A	N/A	E.3-78	4, 5, 12, 16ad, 20, 21g	(1)
Tobias, Joan	C.3-187	4	(1)	None	N/A	N/A
Toenjes, Mrs. H.R.	C.3-187	8ade, 10a, 15, 21e	(1)	None	N/A	N/A
Tornita, Mitsuo	C.3-188	4	(1)	None	N/A	N/A
Topliss, Gloria	C.3-188	4	(1)	None	N/A	N/A
Topliss, Robert L.		See Business/ Commercial		E.3-78	4, 5, 12, 16ad, 20, 21g	(1)
Tracy, Rachelle and Various Signatures	C.3-237	1a, 16	(1)	E.3-23	4	(1)
Trager, John G.	C.3-236	3a, 8d, 21ef	(1)	None	N/A	N/A
Trujillo, Joe H.	None	N/A	N/A	E.3-79	4, 5, 12, 16ad, 20, 21g	(1)
Tucker, Carolyn	None	N/A	N/A	E.3-26	4, 14f, 21f	(1)
Trunk, Dan	C.3-189	4	(1)	None	N/A	N/A
Uleske, Howard/Shawn	C.3-190	4, 8d, 10a, 21f	(1)	None	N/A	N/A
Ulfeldt, Virginia	C.3-190	8e, 10c	(1)	None	N/A	N/A
Urbanavage, Leonard J.	None	N/A	N/A	E.3-79	4, 5, 12, 16ad, 20, 21g	(1)
Urbanavage, Ruth B.	None	N/A	N/A	E.3-80	4, 5, 12, 16ad, 20, 21g	(1)
Valenzuela, David	C.3-231	4, 16b	(1)	None	N/A	N/A
Van Patten, Georgia	C.3-191	4, 10	(1)	None	N/A	N/A
Vassilakos, Marion	C.3-191	4, 8a	(1)	None	N/A	N/A
Vincent, Charles F.	None	N/A	N/A	E.3-80	4, 5, 12, 16ad, 20, 21g	(1)
Vinton, Joanne	C.3-192	1b, 8d, 9b, 14ceg, 15ad, 17a, 21bcfg	4.4.1	E.3-27	21f	4.4.2
Voden, Gerre S.	C.3-194	4	(1)	None	N/A	N/A
Wade, Alpha	D.2-14	4	(1)	None	N/A	N/A

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Wadlington, Geneva	None	N/A	N/A	E.3-81	4, 5, 12, 16ad, 20, 21g	(1)
Wadlington, Walter J.	None	N/A	N/A	E.3-81	4, 5, 12, 16ad, 20, 21g	(1)
Walker, Zita	None	N/A	N/A	E.3-82	4, 5, 12, 16ad, 20, 21g	(1)
Walsh, Ron S.	None	N/A	N/A	E.3-82	4, 5, 12, 16ad, 20, 21g	(1)
Ware, Marguerite A.	C.3-194	4, 19, 20, 21	(1)	None	N/A	N/A
Warzybok, Henry M.	C.3-195 D.1-30	3a, 4, 8, 10ac, 20, 21	(1)	None	N/A	N/A
Watts, Sean	C.3-195	4	(1)	None	N/A	N/A
Weaver, Hazel	D.1-24	8e, 10a, 19, 21	(1)	None	N/A	N/A
Weide, David L., Ph. D.	D.3-14	4, 16a	(1)	None	N/A	N/A
Weikel, Karl F.	None	N/A	N/A	E.3-83	4, 5, 12, 16ad, 20, 21g	(1)
Weister, Robert	C.3-236	3a, 8d, 21ef	(1)	None	N/A	N/A
Wendler, Jill	C.3-236	3a, 8d, 21ef	(1)	None	N/A	N/A
Westerman, A. D.	None	N/A	N/A	E.3-83	4, 5, 12, 16ad, 20, 21g	(1)
Weston, Jeff	C.3-196	4	(1)	None	N/A	N/A
Wheat, Mr. and Mrs. Francis M.	C.3-196	4, 8d, 10a	(1)	None	N/A	N/A
Wheeler, Willard T.	C.3-197	3a, 4, 8e, 20, 21e	(1)	None	N/A	N/A
Whitaker, Morgan	None	N/A	N/A	E.3-84	4, 5, 12, 16ad, 20, 21g	(1)
White, Bruce	C.3-197	4	(1)	None	N/A	N/A
White, Ethel	None	N/A	N/A	E.3-84	4, 5, 12, 16ad, 20, 21g	(1)
Wieczorek, Daniel	C.3-198	8d, 10a, 21bf	(1)	None	N/A	N/A
Wikle, Claire	C.3-198	10a, 21, 21bf	(1)	None	N/A	N/A
Wilber, Pat	C.3-199	4, 8d, 10a, 21bf	(1)	None	N/A	N/A
Wiley, Carol	D.1-22	8, 10ac, 21	(1)	None	N/A	N/A
Wilkinson, Louis A.	C.3-199	3a, 8d, 21ef	(1)	None	N/A	N/A
Williams, Jerry C.	None	N/A	N/A	E.3-85	4, 5, 12, 16ad, 20, 21g	(1)
Williams, Joseph R./Rhumell	C.3-200	4	(1)	E.3-27	4, 21	(1)
Williams, Mrs. Pat	C.3-200	4	(1)	E.3-28	4, 21f	(1)
Williams, Patsy	C.3-201	4	(1)	None	N/A	N/A
Williams, Wendi J. W.	C.3-201	4	(1)	None	N/A	N/A
Willis, Vernon B.	None	N/A	N/A	E.3-85	4, 5, 12, 16ad, 20, 21g	(1)
Wilson, Harold E.	None	N/A	N/A	E.3-86	4, 5, 12, 16ad, 20, 21g	(1)

EXPLANATION: This table lists each commenter and the location where a response may be found, or where the requested information has been previously provided in the Draft EIS/EIR and/or Supplement. The table is intended to both direct the reader, and to ensure that each substantive comment has been provided with a response.

## NOTE:

- (1) Where a specific response section is not indicated, see Table 2.1 for a location where a response may be found and/or where the requested information is located in the Draft EIS/EIR or Supplement.



**LIST OF COMMENTERS AND INDEX TO RESPONSES**  
(Continued)

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COMMENTS	DRAFT EIS/EIR			SUPPLEMENT		
	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/EIR Section)	COMMENT Letter/Transcript (Appendix Page)	ISSUES	RESPONSE <sup>(1)</sup> (Final EIS/EIR Section)
Wilson, James	C.3-202	3a, 8de, 21e	(1)	None	N/A	N/A
Wilson, Jeffrey L.	C.3-202	4, 16a	(1)	E.3-28	4, 5c, 12, 16a, 21	(1)
Winter, Kirsten	C.3-203	1ad, 4, 8bd, 14c	(1)	None	N/A	N/A
Wire, John P./Terry Krueger	C.3-204	4	(1)	None	N/A	N/A
Wise, Robert	C.3-204	4, 16a	(1)	None	N/A	N/A
Woolery, Michael	C.3-205	4	(1)	None	N/A	N/A
Wyckoff, Ernest H.	None	N/A	N/A	E.3-86	4, 5, 12, 16ad, 20, 21g	(1)
Wyman, Richard V., Ph.D.	C.3-206	8ce, 15b, 21, 21ef	4.4.1	None	N/A	N/A
Yanoyislate, Craig	C.3-207	3a, 4	(1)	None	N/A	N/A
Yard, John W.	C.3-208	4, 21e	(1)	None	N/A	N/A
Yawczak, Nicolaus	None	N/A	N/A	E.3-87	4, 5, 12, 16ad, 20, 21g	(1)
Yeager, Della K.	None	N/A	N/A	E.3-87	4, 5, 12, 16ad, 20, 21g	(1)
Yeager, John A.	None	N/A	N/A	E.3-88	4, 5, 12, 16ad, 20, 21g	(1)
Young, Dottie	C.3-208	4, 16a	(1)	None	N/A	N/A
Yourth, Jeanne	C.3-209	8de, 21ef	(1)	None	N/A	N/A
Zaebst, Robert J.	None	N/A	N/A	E.3-88	4, 5, 12, 16ad, 20, 21g	(1)
Zanella, Andrew W.	C.3-210	3a, 4, 8e	(1)	None	N/A	N/A
Zervas, Stan	C.3-210	8d, 10a, 21bf	(1)	None	N/A	N/A
Zirkle, Donald M.	None	N/A	N/A	E.3-89	4, 5, 12, 16ad, 20, 21g	(1)
Zirkle, Kathryn M.	None	N/A	N/A	E.3-89	4, 5, 12, 16ad, 20, 21g	(1)

EXPLANATION: This table lists each commenter and the location where a response may be found, or where the requested information has been previously provided in the Draft EIS/EIR and/or Supplement. The table is intended to both direct the reader, and to ensure that each substantive comment has been provided with a response.

## NOTE:

- (1) Where a specific response section is not indicated, see Table 2.1 for a location where a response may be found and/or where the requested information is located in the Draft EIS/EIR or Supplement.







**CHAPTER 3.0**  
**CHANGES TO DRAFT EIS/EIR AND SUPPLEMENT**







### 3.0 CHANGES TO DRAFT EIS/EIR AND SUPPLEMENT

1. Comments submitted by the public and other agencies on the Draft EIS/EIR and Supplement led to refinements in project design plans during the selection of final mitigation measures. The information provided in this chapter reflects changes made as a result of such comments. In addition, alternative mitigation scenarios for backfilling the project mine pits were reexamined. The information presented in this chapter therefore amends or augments elements of the Draft EIS/EIR and Supplement as indicated, and is presented in abbreviated format in the Summary chapter of this Final EIS/EIR. Summary Tables S.1 and S.2 amend Draft EIS/EIR Table 1.1.1 and Supplement Table 4.1, respectively.

#### 3.1 FINAL PROJECT DESIGN

1. Preliminary project design plans were submitted by the Applicant to the BLM in a Plan of Operations (Viceroy, 1988a) and to the County in an Application for a Mine Plan and Reclamation Plan Approval and Site Plan Review (Viceroy, 1988b). The proposed design plans were modified as a result of the Draft EIS/EIR evaluations and were reflected in the project description in the Draft EIS/EIR (Section 3.2, Proposed Action).
2. As a result of public and agency review of the Draft EIS/EIR, additional specificity for the mitigated design and alternate forms of mitigation were suggested, specifically for features including the access route location, physical measures to isolate process solutions from wildlife, and fuel for power generation. Those refinements were described in the Supplement and evaluated for potential environmental effects.
3. The final project designs for major elements of the project are described in the following sections, including the site plan, access alignment, and solution storage. These design plans reflect each of the adopted mitigation suggestions that have resulted from input by the public and other agencies during the environmental review process.

##### 3.1.1 SITE PLAN

1. The onsite arrangement of major facilities is shown in Figure 3.1 (Final Project Site Plan). This site plan replaces Draft EIS/EIR Figure 3.2.5 (Preliminary Site Plan) as the preferred







**MAJOR FACILITIES SUMMARY**

FACILITY	ACREAGE
1. LESLEY ANN/JUMBO PITS	100
2. ORO BELLE PIT	35
3. OVER BURDEN PILE	300
4. HEAP LEACH PADS	330
5. SOIL STORAGE	70
6. ROADS	17
a. HAUL ROADS	
b. ACCESS ROADS	
c. CONVEYORS/HAUL ROADS	
7. SOLUTION STORAGE AREA	10
a. PREGNANT AND INTERMEDIATE	
b. PREGNANT, INTERMEDIATE AND BARREN	
8. CRUSHING AREA	10
a. ADMINISTRATION BUILDING/PARKING	
b. MINING CONTRACTOR'S SHOP	
9. PROCESSING PLANT AREA	5
PROCESS BUILDING, WAREHOUSING	
SUBTOTAL	890

**OFFSITE ACCESS**

ACCESS ROUTE IMPROVEMENTS	25
TOTAL	915

**SITE FEATURES**

- A. CLAY PIT
  - B. BIG CHIEF HILL
  - C. HART (TOWNSITE)
  - D. HART MINE ROAD
  - E. DRAINAGE WASH
  - F. PROJECT ACCESS ROAD
- DESERT TORTOISE FENCING

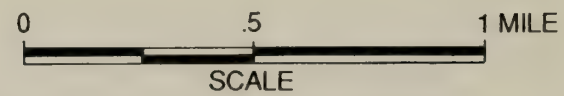


FIGURE 3.1

**FINAL PROJECT SITE PLAN**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.

THIS SITE PLAN FIGURE REPLACES DRAFT EIS/EIR FIGURE 3.2.5 (PRELIMINARY SITE PLAN) AS THE PREFERRED DESIGN.



design. The site plan is identical to that evaluated in the Draft EIS/EIR and Supplement, with the exception of relocation of administration facilities to the South Clay pit area. This minor modification does not affect the analyses presented in the Draft EIS/EIR or Supplement.

2. Also shown on the site plan is the location of desert tortoise fencing that has been recommended by the FWS. This fencing, designed to exclude desert tortoises, would be installed both above and below ground. It would protect tortoises that may be in the vicinity from project operations.

### 3.1.2 SOLUTION STORAGE AREAS

1. The Draft EIS/EIR and Supplement discussed storage of cyanide process solutions used to recover gold and potential methods to construct the facilities to preclude wildlife access and prevent avian mortality. The Draft EIS/EIR recommended covering the solution storage ponds with fine mesh netting. Neoprene covers have also been successfully used at other operations for this purpose. However, based upon comment by the public and other agencies, the preferred mitigation design for the Castle Mountain Project would be to eliminate the use of storage ponds and instead use steel tanks. Plans for storage of process solutions in tanks has therefore been adopted to mitigate the potential effects to wildlife. The conceptual design for the solution storage area is shown in Figure 3.2 (Solution Storage Tanks Conceptual Design), which replaces Supplement Figure 3.8 (Solution Storage Tanks Conceptual Drawing).

### 3.1.3 ACCESS

1. The preferred access for the Proposed Action is shown in Figure 3.3 (Mitigated Access Route Configuration). This final design alignment has been determined as a result of the suggestions of agencies and the public on the Draft EIS/EIR and Supplement. The final design provides for the protection of the desert tortoise population by locating traffic outside high density habitat. The alignment also minimizes new road construction and related effects on vegetation and wildlife habitat by using existing roads and trails in the area to the extent possible. This access route figure therefore replaces Draft EIS/EIR Figure 3.2.10 (Proposed Access Routes and Improvements) and Supplement Figure 3.3 (Proposed Access Routes and Improvements).

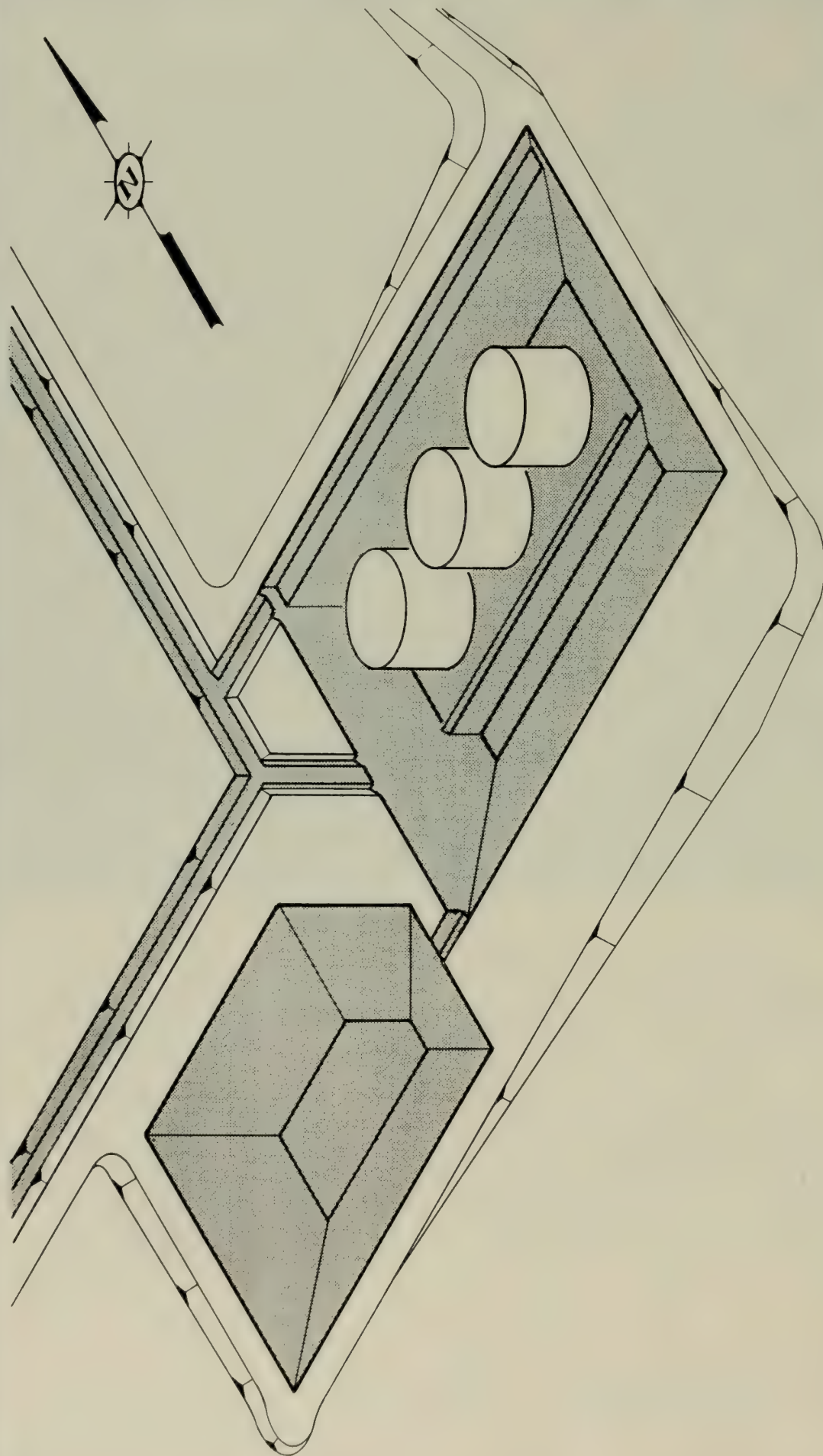


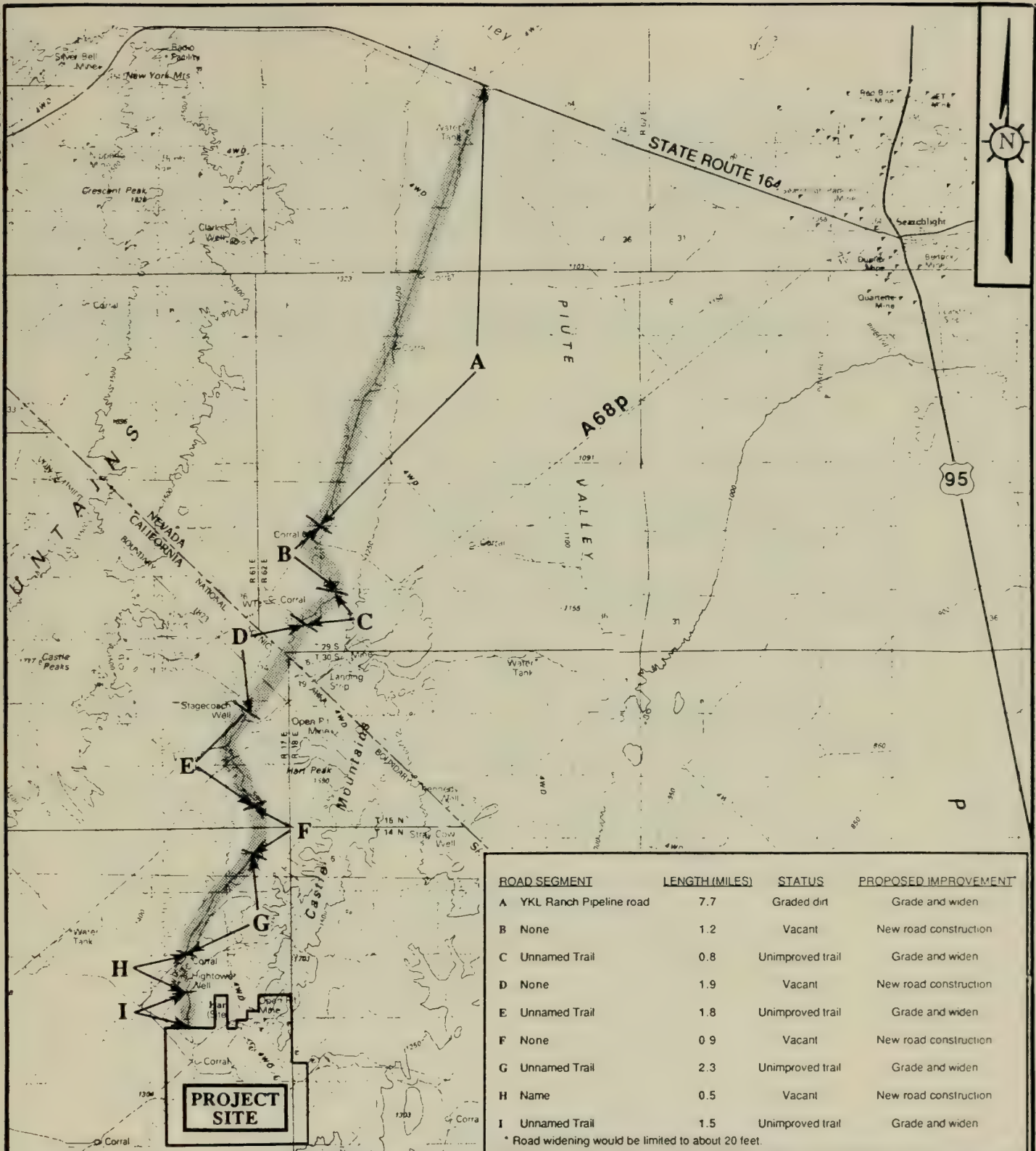
FIGURE 3.2

**SOLUTION STORAGE TANKS  
CONCEPTUAL DESIGN**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.

NOTE: THIS SOLUTION STORAGE CONCEPTUAL FIGURE REPLACES SUPPLEMENT  
FIGURE 3.8 (SOLUTION STORAGE TANKS CONCEPTUAL DRAWING) AS THE  
PREFERRED DESIGN.



**ACCESS ROUTE****IMPROVEMENTS****MILES**

WIDEN EXISTING ROAD

14.1

CONSTRUCT NEW ROAD

4.5

NOTE: THIS ACCESS ALIGNMENT FIGURE REPLACES DRAFT EIS/EIR FIGURE 3.2.10 (PROPOSED ACCESS ROUTES AND IMPROVEMENTS) AND SUPPLEMENT FIGURE 3.3 (PROPOSED ACCESS ROUTES AND IMPROVEMENTS) AS THE PREFERRED DESIGN.

REFERENCE: 7.5 MINUTE U.S.G.S. TOPOGRAPHIC MAPS  
 NANPAH, CALIFORNIA-NEVADA; DAVIS DAM,  
 ARIZONA-NEVADA; MESQUITE LAKE, CALIFORNIA-  
 NEVADA; BOULDER CITY, ARIZONA-NEVADA-CALIFORNIA  
 DATED: 1965, 1982, 1985, AND 1983 RESPECTIVELY

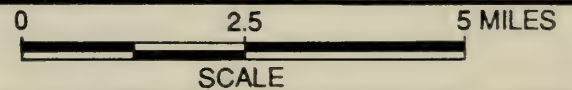


FIGURE 3.3

## MITIGATED ACCESS ROUTE CONFIGURATION

CASTLE MOUNTAIN PROJECT  
 ENVIRONMENTAL SOLUTIONS, INC.



### 3.2 MITIGATION MEASURES INCORPORATED INTO THE PROJECT

1. As a result of comment from the public and other agencies on the Draft EIS/EIR and Supplement, additional specificity for mitigation measures and preferred alternate forms of mitigation have been adopted as part of the Proposed Action. Measures that were revised in the Supplement were described on pages 3-21, 3-22, 3-28, and 3-34 of that document. In addition, some Draft EIS/EIR measures have been modified, and some have been deleted. These revisions are listed below. A comprehensive list of project mitigation measures is also presented in this section.

#### 3.2.1 ADDITIONAL MITIGATION MEASURES

1. The following mitigation measures have been incorporated in response to comments from other agencies and the public and are referenced to the appropriate pages of the Draft EIS/EIR.
2. Additional vegetation measures (added to Draft EIS/EIR page 6.4-4):
  - Measure No. 7: Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed instead of bulldozed to enhance recovery.
  - Measure No. 8: The onsite location of the *Penstemon stephensii* population is outside the area of project facilities and would therefore not be disturbed by project operations. However, the population could be eliminated during required reclamation of mine exploration drill roads. The following measures shall be implemented:
    - Flag, fence, sign, and/or otherwise delineate the onsite population to ensure avoidance during project construction and operations. Protect other discovered populations in a similar manner, as appropriate.
    - Monitor the known population and other individuals/populations that could occur during project operations.
    - If individuals do not appear elsewhere onsite, collect and broadcast seed from the known population to other onsite areas or transplant individuals to another location prior to reclamation of mine exploration drill roads.
  - Measure No. 9: Road segment A of the Mitigated Access Route shall, to the extent possible, use the existing alignment of the YKL Ranch water pipeline maintenance road for access to State Route 164.
  - Measure No. 10: Baseline vegetation measurements shall be completed as part of the Revegetation Research Program prior to surface disturbing activities.

Measure No. 11: Livestock shall be excluded from revegetated areas until termination of the project and maturation of the revegetated areas is such that grazing can be accommodated. The Applicant shall be responsible for removing fences enclosing these areas at the appropriate time as determined by BLM.

3. Additional wildlife measures (added to Draft EIS/EIR page 6.5-2):

Cyanide Solution

Measure No. 2: Steel tanks have been adopted as the preferred design concept for storage of process solutions. The constructed facility shall:

- Be designed such that solutions are unavailable to wildlife.
- Include netting over the emergency storage basin, designed to preclude access by birds and bats during short-term solution storage.
- Provide for replacement of netting over the emergency storage basin if avian entanglement becomes a problem.
- Employ hazing techniques in the event that process solution enters the stormwater storage basin.

Measure No. 3: Active heap leach pads shall be surrounded by chain-link fencing.

Desert Tortoise

Measure No. 3: The Applicant shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set out in the FWS Biological Opinion.

Ravens

Measure No. 3: Power distribution poles shall be constructed in a manner that will discourage raven nesting or roosting.

Other

Measure No. 1: Employees shall not bring domestic cats to the site. Dogs shall be kept on a leash at all times.

Measure No. 2: Project fencing shall be constructed according to BLM specifications to prevent potential bighorn sheep entanglement.

4. Additional visual resources measures (added to Draft EIS/EIR page 6.8-3):

Reclamation

Measure No. 5: The Applicant shall incorporate reclamation of the adjacent north clay pit, located offsite, into the reclamation plan. This will reduce the overall color contrasts created by mining in the Hart Mining District.

### 3.2.2 CHANGES IN MITIGATION MEASURES

1. Many commenters on the Draft EIS/EIR requested that more specificity be provided at this time on the steps that would be taken to protect Piute Spring flow, should aquifer drawdown



exceed that predicted. A plan for the ground water monitoring and contingency response has therefore been prepared, and is described in Section 4.1.5 (Water Resources) of this Final EIS/EIR. The ground water monitoring mitigation measure is therefore revised as follows to reflect this additional specificity (Draft EIS/EIR pages 6.3-2).

Measure No. 2 (revised):

- Two additional ground water monitor wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.
- Water levels in monitor wells (W-3, W-19, W-37, W-38, and PS-2) and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water levels and stream flows are measured during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Applicant.
- In the event ground water levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the Draft EIS/EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37.
- In the event ground water levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the Draft EIS/EIR, the characteristics of the Lanfair Valley aquifer shall be re-evaluated, including a recalibration of the hydrogeologic model. And the model shall be re-run to determine if any impact to Piute Spring would be anticipated
- BLM's decision respecting proposed additional mitigation actions (if any) arising from the re-evaluation shall be circulated for public review and comment prior to implementation.
- If ground water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Applicant shall reduce its water pumping rates in accordance with the provisions of the ground water monitoring plan. See Table 4.3 (Well Water Level Decline Action Plan ) in Section 4.1.5.1 (Ground Water Withdrawal and Piute Spring Flow) of this Final EIS/EIR.

2. Vegetation experts have indicated that transplantation of Joshua trees under three feet in height is largely unsuccessful. The transplantation program shall therefore focus on larger specimens (3 to 10 feet in height, unbranched, or with few branches) to maximize transplantation success. Accordingly, the fifth item under mitigation measure number 1 of Section 6.4.1.2 of the Draft EIS/EIR is revised as follows:

- Identification of dominant species to be used in revegetation. Salvaging of individuals of species amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants shall be kept in





nursery areas for replanting on reclaimed areas to provide a continuous seed source. A goal would be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height unbranched or with few branches.

3. It has been suggested that the reclamation procedures to be used to reclaim County Road A68p should be compatible with its use as a equestrian trail. The second item under mitigation measure number 3 on page 3-22 of the Supplement is therefore revised as follows:

Measure No. 3 (revised):

- Subject to BLM approval of reclamation procedures and public road right-of-way abandonment procedures to be implemented by Clark County, Nevada, the Applicant shall provide barriers (such as fences and berms) to vehicle traffic on County Road A68p to render it impassable for vehicular use. The 9.5 mile road shall be reclaimed for use as an equestrian trail.
4. Relocation of the access road to Searchlight to the alignment shown on Figure 3.3 of this Final EIS/EIR eliminates possible effects on the wildlife guzzler located along the originally proposed access road alignment. Accordingly, the guzzler need not be relocated. Mitigation measure number 1 Guzzler Relocation of Section 6.5.1.2 of the Draft EIS/EIR is revised as follows:

#### Guzzler Relocation

Measure No. 1 (revised):

- To reduce disturbance to wildlife and avoid attracting wildlife to the area of activities, wildlife guzzler #B-79 northwest of the project site shall be relocated to an appropriate location determined by BLM.

### 3.2.3 DELETED MITIGATION MEASURES

1. At the time that the Draft EIS/EIR was prepared, it was suggested that the mine pit walls could facilitate nesting sites for raptors. A mitigation measure was therefore included stating:

"As mining operations progress, ledges in pit walls shall be constructed for raptor nesting and roosting ledges. A BLM wildlife biologist would provide guidance for such activity" (Draft EIS/EIR page 6.5-5).

As the issue of raven predation on the desert tortoise became known, it was noted by the FWS that such ledges could be used by ravens for nesting and roosting, and that habitat for this species should not be enhanced. This mitigation measure has therefore been deleted.

#### 3.2.4 LIST OF FINAL MITIGATION MEASURES

1. Table 3.1 (Final Mitigation Measures) is a compilation of all the Castle Mountain Project mitigation measures that have been adopted as part of the Proposed Action. Each measure will be incorporated into the Mitigation Compliance Program (MCP). The MCP will specify the criteria for compliance, reporting schedule, monitoring schedule, verification activities, and other relevant data to ensure that required mitigation measures are properly implemented. The framework for the MCP was presented in the Supplement (Appendix E).

TABLE 3.1

## MITIGATION MEASURES

Page 1 of 7

<b>GEOLOGY</b>	<b>Water Resources Continued</b>
<ul style="list-style-type: none"> <li>Mineral Resources - Project facilities shall be located such that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed. Slopes shall be stabilized or abandoned by constructing engineered pit walls at safe slopes considering the geologic structure and the exposed rock properties.</li> <li>Paleontological Resources - The Applicant shall contract an individual qualified in the assessment of woodrat middens to inventory the project site for these resources prior to initiating the operation. If located, middens would be assessed for potential paleontological value, extracted at the discretion of BLM, and stored at an approved repository.</li> </ul>	<ul style="list-style-type: none"> <li>BLM's decision respecting proposed additional mitigation actions (if any) arising from the re-evaluation shall be circulated for public review and comment prior to implementation.</li> <li>If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Applicant shall reduce its ground water pumping rates in accordance with the provisions of the ground water monitoring plan. See Table 4.3 (Water Level Decline Action Plan) in Section 4.1.5.1 (Ground Water Withdrawal and Piute Spring Flow) of this Final EIS/EIR.</li> </ul>
<b>WATER RESOURCES</b>	
<ul style="list-style-type: none"> <li>Project water requirements shall be minimized by the following operational procedures:               <ul style="list-style-type: none"> <li>Crushing the ore to reduce leaching time so that less water would be circulated and related evaporation would be reduced.</li> <li>Employing the drip irrigation method to distribute solution directly on the heaps, including both the tops and sides.</li> </ul> </li> <li>Hydrologic Monitoring:               <ul style="list-style-type: none"> <li>Two additional ground water monitoring wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.</li> <li>Water levels in monitor wells (W-3, W-19, W-37, W-38, and PS-2) and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water levels and stream flows during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Applicant.</li> <li>In the event ground water levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the Draft EIS/EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37.</li> <li>In the event ground water levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the Draft EIS/EIR, the characteristics of the Lanfair Valley aquifer shall be re-evaluated, including a recalibration of the hydrogeologic model.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the proposed Castle Mountain project operations, the Applicant shall pay the costs to have these wells deepened, or shall otherwise provide replacement water to the owner of the affected wells.</li> <li>The heap leach piles shall be located to avoid disruption of the large drainage that passes through the western portion of the project site. Minor drainage that would be restricted by heap pad construction shall be diverted around the heap piles.</li> <li>Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill to effect water quality.</li> <li>The Applicant shall comply with RWQCB requirements to use materials and implement procedures to safely contain liquids, to achieve the zero discharge system proposed for the project's solution processing system including:               <ul style="list-style-type: none"> <li>Impermeable synthetic liners for process solution basins and heap leach pads.</li> <li>Sealed drainage and collection facilities to transport or contain leaching solution.</li> <li>Diked leach pads to confine and control drainage from the leach piles.</li> <li>Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and drandown of solution from the leach pads in the event pumps could not operate because of a power failure.</li> <li>Drainage or diversion ditches outside the heap leach system to preclude entry of storm run-off into the system.</li> </ul> </li> </ul>



**TABLE 3.1**  
**MITIGATION MEASURES**  
**(Continued)**

Page 2 of 7

<i>Water Resources Continued</i>	<i>Vegetation Continued</i>
<ul style="list-style-type: none"> <li>- A leakage detection monitoring system for the leach pads and basins.</li> <li>- Regularly prepared monitoring reports on the current status of operations.</li> <li>- Neutralization and final rinsing of the heap leach piles, and removal of solution storage facilities at the time of project completion.</li> <li>• Reclamation activities shall include control of slopes on cuts and fills, plus revegetation to control surface erosion.</li> </ul>	<ul style="list-style-type: none"> <li>- Identification of dominant species to be used in revegetation. Salvaging of individuals of species amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants would be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. A goal would be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.</li> <li>- Selection of a site appropriate for a nursery. Considerations would include water availability, access, and other requirements determined by the revegetation experts.</li> </ul>
<p><b>VEGETATION</b></p> <ul style="list-style-type: none"> <li>• In order to maximize the success and reduce the time of revegetation, the Applicant shall develop a revegetation research program based upon information provided by qualified experts in desert flora (such as the California University Desert Studies Consortium). This research program shall include measures such as:             <ul style="list-style-type: none"> <li>- Review of available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.</li> <li>- Development of the methodology for research and a schedule for implementation of the revegetation program for submittal to BLM and the County within the first year of project operation.</li> <li>- Revegetation success shall be determined by measuring the density and diversity of perennial species. The 10-year goal for density, using only perennial species, will be 21 percent as compared to relatively undisturbed control sites. Using a sigmoidal curve, the five year goal for density will be six percent of the control. The 10-year goal for diversity will be 15 percent, expressed as a similarity index of the control. The 5-year goal for diversity, based on a sigmoidal curve, will be four percent, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly allocated plots located within areas representative of the reclaimed lands.</li> <li>- Stockpiling of available soil. Redistribution of soils over disturbed areas shall be done following completion of activities on an area. Studies shall be completed to determine where available soil would be most effectively used.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. A goal would be to initiate revegetation procedures within six months following completion of project activities over an area.</li> <li>- Potential invasion of exotic species shall be monitored. If exotic species densities exceed those on non-disturbed areas at the project site, a program of weed control acceptable to the County and BLM shall be implemented.</li> <li>- Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.</li> <li>- Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.</li> <li>- Ground preparation procedures shall include ripping and harrowing of compacted soils. Criteria for slope gradients shall be determined through onsite research on revegetation success.</li> <li>- Implementation of a five-year monitoring program following project completion to verify revegetation results based upon the goals for species diversity and density.</li> <li>• Revegetation efforts shall be initiated as soon as possible during the project operation period, as use of specific disturbed areas is completed.</li> <li>• The project revegetation program shall collect data on revegetation and recovery of the desert grassland and provide such data to BLM to supplement UPA monitoring and planning strategies.</li> </ul>

TABLE 3.1

## MITIGATION MEASURES (Continued)

### Vegetation Continued

- Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM.
- Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed instead of bulldozed to enhance recovery.
- The following measures shall be implemented concerning the *Penstemon stephensii* population onsite:
  - Flag, fence, sign, and/or otherwise delineate the onsite population to ensure avoidance during project construction and operations. Protect other discovered populations in a similar manner, as appropriate.
  - Monitor the known population and other individuals/populations that could occur during project operations.
  - If individuals do not appear elsewhere onsite, collect and broadcast seed from the known population to other onsite areas or transplant individuals to another location prior to reclamation of mine exploration drill roads.
- Road segment A of the Mitigated Access Route shall, to the extent possible, use the existing alignment of the YKL Ranch water pipeline maintenance road for access to State Route 164.
- Baseline vegetation measurements shall be completed as part of the revegetation research program prior to surface-disturbing activities.
- Fencing shall be used to exclude livestock from revegetated areas until termination of the project and maturation of the revegetated areas, such that grazing can be accommodated. The Applicant shall be responsible for removing fences enclosing these areas at an appropriate time, as determined by the BLM.

### WILDLIFE

- A program to educate the workforce about area wildlife shall be implemented by the Applicant in connection with the safety program for construction workers and employees. The program shall acquaint personnel with laws protecting vegetation and wildlife, the characteristics of desert wildlife, and proper procedures should wildlife be encountered. Drivers shall be educated

### Wildlife Continued

- about potential hazards of desert road driving, driving at proper speeds, and the importance of not harassing or otherwise interfering with wildlife, especially the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations.
- An environmental specialist or contracted consultant shall be employed by the Applicant to monitor the effectiveness of wildlife mitigation measures and the revegetation program. Results shall be reported to BLM and County monthly as concerns wildlife measures and annually concerning the revegetation program.
- Cyanide Solution - Measures to isolate cyanide processing solutions from wildlife have been incorporated in project preliminary design plans. Specific measures to be employed shall be tested for their effectiveness in an ongoing evaluation program after commencement of operations.
  - Solution Storage Area
    - Steel tanks have been adopted as the preferred design concept for storage of process solutions. The constructed facility shall:
      - Be designed such that solutions are unavailable to wildlife.
      - Include fencing and netting over the emergency storage basin, designed to preclude access by birds and bats during short-term solution storage.
      - Employ hazing techniques in the event that process solution enters the stormwater storage basin.
      - Provide for replacement of netting over the emergency storage basin if avian entanglement becomes a problem.
  - Heap Piles
    - Fencing - Active heap leach pads shall be surrounded by chain-link fencing.
    - Irrigation - Drip irrigation methods shall be used to distribute solution directly on the heaps, including both the tops and sides.



**TABLE 3.1**  
**MITIGATION MEASURES**  
**(Continued)**

<i>Wildlife Continued</i>	<i>Wildlife Continued</i>
<ul style="list-style-type: none"> <li>- <u>Solution Handling</u> <ul style="list-style-type: none"> <li>• The cyanide solution system shall be operated as a closed circuit, with solution transported from heap piles, to storage tanks, to processing plan, and back to the heap piles in a system of pipes, rather than open ditches. Open ditches would be used only to carry heavy storm run-off.</li> </ul> </li> <li>• <u>Desert Tortoise</u> <ul style="list-style-type: none"> <li>- The Applicant shall locate and flag onsite tortoise burrows prior to initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities, relocation of tortoises shall be coordinated with BLM and FWS.</li> <li>- The Applicant shall inform project personnel as to proper methods for handling tortoises and of their protected status.</li> <li>- A project-sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented.</li> <li>- The easterly segment of the Mitigated Access Route shall use an alignment along the western flank of Piute Valley using a segment known as the YKL Ranch Maintenance Road. Access road construction costs shall be the responsibility of the Applicant.</li> <li>- Any tortoise burrows located within the alignment of new road construction shall be flagged and tortoises, if present, removed according to procedures acceptable to BLM and FWS.</li> <li>- The Applicant shall comply with the Reasonable and Prudent Measures and the Implementing Terms and Conditions set out in the FWS Biological Opinion.</li> <li>- Subject to BLM approval of reclamation procedures and public road right-of-way abandonment procedures to be implemented by Clark County, Nevada, the Applicant shall provide barriers to vehicle traffic on County Road A68p to render it impassable for vehicular use. The 9.5 mile road shall be reclaimed as an equestrian trail.</li> </ul> </li> <li>• <u>Lighting</u> <ul style="list-style-type: none"> <li>- Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to reduce fugitive light. The shielded lights shall limit direct lighting to the area of activity.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <u>Guzzler Relocation</u> <ul style="list-style-type: none"> <li>- Wildlife guzzler # B-79 northwest of the project site shall be relocated to an appropriate location determined by BLM.</li> </ul> </li> <li>• <u>Ravens</u> <ul style="list-style-type: none"> <li>- Project waste shall be properly managed and the site monitored to control human garbage that could attract ravens. Garbage shall be kept in containers designed to exclude wildlife.</li> <li>- As part of the onsite biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven population numbers are occurring.</li> <li>- Power line poles shall be constructed in a manner that will discourage raven nesting or roosting.</li> </ul> </li> <li>• <u>Domestic Animals</u> <ul style="list-style-type: none"> <li>- Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times.</li> </ul> </li> <li>• <u>Bats</u> <ul style="list-style-type: none"> <li>- An examination of the shafts and adits shall be completed prior to earth-moving activities in the area in order to estimate the likelihood that they are occupied by bats or other species. The evaluation shall be completed during the winter hibernating period by an ecologist familiar with bat fauna. Should a colony be found, or substantial use by individual bats be indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by a colony would be required for project development, a mitigation program shall be completed.</li> <li>- To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall either be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress.</li> </ul> </li> </ul>

TABLE 3.1

MITIGATION MEASURES  
(Continued)

Page 5 of 7

<i>Wildlife Continued</i>	<i>Air Quality Continued</i>
<ul style="list-style-type: none"> <li>• <u>Raptors</u></li> <li>- Design and construction of electric power distribution poles shall incorporate provisions for raptor safety.</li> <li>• <u>Bighorn Sheep</u></li> <li>- Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement.</li> </ul>	<ul style="list-style-type: none"> <li>- The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyers shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind-blown dust.</li> <li>- Dust suppression for ore processing operations shall be controlled using baghouses constructed to specifications acceptable to the APCD.</li> </ul>
<p><b>AIR QUALITY</b></p> <ul style="list-style-type: none"> <li>• Fugitive Dust Emissions Control - A number of measures shall be incorporated into the project design to control the generation of PM<sub>10</sub> particulates. They include:             <ul style="list-style-type: none"> <li>- Haul roads within the site boundary shall be surfaced with durable gravel or crushed rock, and shall be well maintained.</li> <li>- Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.</li> <li>- Unauthorized vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.</li> <li>- Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.</li> <li>- During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the SBCAPCD for review prior to use. The debris collecting devices shall have a minimum design efficiency of 90 percent.</li> <li>- The live storage portion of the coarse ore stockpile shall be covered to minimize wind-blown dust.</li> <li>- Blasting during high winds shall be minimized or curtailed to minimize wind-blown dust.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring reclamation and revegetation until operations are completed.</li> <li>• As required by the SBCAPCD, PM<sub>10</sub> concentrations shall be monitored at several locations near the project boundaries. The monitoring data shall be routinely submitted to that agency to demonstrate that the project is not causing ambient standards to be exceeded.</li> <li>• Fuel Use Emissions Control             <ul style="list-style-type: none"> <li>- Permanent onsite power shall be generated using propane or natural gas.</li> <li>- Emissions from mobile equipment and vehicular engines shall be controlled by:                 <ul style="list-style-type: none"> <li>• Using only low sulfur fuels.</li> <li>• Implementing a routine maintenance program to avoid operating inefficiencies.</li> <li>• Reducing vehicular traffic by providing a project-sponsored bus/van pool for the majority of employees.</li> </ul> </li> </ul> </li> <li>• Hydrogen Cyanide Emissions Control             <ul style="list-style-type: none"> <li>- Hydrogen cyanide shall be routinely monitored at the processing facilities as a requirement of the employee health and safety plan implemented according to Mine Safety and Health Administration regulations. In addition, the Applicant shall periodically perform airborne HCN surveys to verify that potential public exposure to cyanide is inconsequential.</li> </ul> </li> </ul>



**TABLE 3.1**  
**MITIGATION MEASURES**  
**(Continued)**

Page 6 of 7

<b>ENVIRONMENTAL HEALTH AND SAFETY</b>	<i>Environmental Health and Safety Continued</i>
<ul style="list-style-type: none"> <li>• Non-hazardous waste materials generated at the site shall be disposed at approved facilities.</li> <li>• Waste oils shall be recycled. Other hazardous wastes shall be disposed offsite using services and procedures approved by the California Department of Health Services and the U.S. Environmental Protection Agency (EPA).</li> <li>• Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with Federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting.</li> <li>• Domestic sewage shall be disposed of in leach fields acceptable to County Department of Environmental Health Services (DEHS). Portable toilet waste shall be removed offsite by a contracted hauler.</li> <li>• Rules and regulations of DEHS shall be followed to assure that no significant public health hazard would be created.</li> <li>• Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials.</li> <li>• Lime or sodium hydroxide shall be added to the cyanide solution to limit release of hydrogen cyanide to less than threshold levels stipulated by Mine and Safety Health Administration (MSHA).</li> <li>• Fences shall be erected around potentially hazardous areas to deter entry by unauthorized personnel or visitors.</li> <li>• A spill prevention control and countermeasures plan shall be developed to establish procedures for spill prevention and cleanup.</li> <li>• A vehicle shall be provided at all times onsite for emergency response in the event of an accident. First aid equipment shall be provided at appropriate locations. Procedures for emergency response shall be developed in the event of an accident.</li> <li>• Personnel trained in security shall be onsite on a 24-hour basis to deter entry to potentially hazardous areas by unauthorized persons.</li> <li>• Training programs shall be implemented to familiarize personnel with their specific jobs, handling of hazardous substances such as cyanide, and first aid procedures.</li> </ul>	<ul style="list-style-type: none"> <li>• The Applicant shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour shall be posted.</li> <li>• Transport of hazardous materials to the site shall be limited to daylight hours, Monday through Friday.</li> </ul> <p><b>VISUAL RESOURCES</b></p> <ul style="list-style-type: none"> <li>• Site Plan - To minimize the degree to which they are seen from sensitive viewpoints:             <ul style="list-style-type: none"> <li>- The overburden pile shall be located on an outwash slope bounded by small hills.</li> </ul> </li> <li>• Heap leach piles shall be constructed as low mesas consistent with alluvial terrace landforms near the valley floor.- Operational Activities and Equipment             <ul style="list-style-type: none"> <li>- Structures shall be painted to blend with the predominant background as viewed from surrounding roads. Colors used shall be selected by BLM and County.</li> <li>- Water and dust inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period.</li> <li>- Outdoor lighting shall be shielded to reduce the visual impact of nighttime operations by limiting lighting to the area of activity.</li> <li>- The Applicant shall remove all operating facilities, including structures, equipment, transmission lines, and fencing at project completion, in conformance with reclamation plan requirements.</li> </ul> </li> <li>• Reclamation             <ul style="list-style-type: none"> <li>- Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce the impact of straight-line geometrics and potential contrasts in form and line. Surfaces shall be designed to be as visually unobtrusive as best practices allow.</li> <li>- Rock staining solutions shall be used on the upper mine pit walls. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes.</li> </ul> </li> </ul>

TABLE 3.1

## MITIGATION MEASURES (Continued)

Page 7 of 7

<i>Visual Resources Continued</i>	<i>Cultural Resources Continued</i>
<ul style="list-style-type: none"> <li>- Revegetation shall include some areas within the project boundary and along access roads that were disturbed by the actions of third parties prior to the time that reclamation of such disturbances was required under FLPMA and SMARA. Clay pits shall be reclaimed using overburden, and rock staining on the upper pit wall of the clay pit on Big Chief Hill. The Applicant shall incorporate reclamation of the adjacent North Clay Pit, located offsite, into the reclamation plan. In addition, subject to BLM approval of reclamation procedures and completion of public road abandonment procedures to be implemented by Clark County, Nevada, the Applicant shall reclaim County Road A68p for use as an equestrian trail. The Applicant shall berm and fence both terminus points of County Road A68p to deter vehicular access.</li> <li>- The Applicant shall comply with all of the reclamation requirements set forth in the Mine/Reclamation Plan including, but not limited to, instituting the required revegetation program.</li> </ul>	<ul style="list-style-type: none"> <li>- The Applicant shall close/reroute existing access not required for operations at those locations of high cultural resource sensitivity in the vicinity of the project.</li> </ul>
<p><b>CULTURAL RESOURCES</b></p> <ul style="list-style-type: none"> <li>• <b>Data Recovery Measures</b> <ul style="list-style-type: none"> <li>- Field work, laboratory studies, and documentation of research results shall be conducted for the five aboriginal sites (CA-SBr-5705, -5706, -5707, -5708 and -6055) located in the vicinity of the Mitigated Access Route and the project operations area. Comments submitted by local Native American representatives pertaining to sensitive areas shall be considered in the evaluation process and artifacts of religious value made available to qualified Native Americans for religious purposes. Pursuant to State and Federal law, recovered resources shall be curated at specific institutions, including the University of California at Riverside and the Nevada State Museum in Carson city or its designate.</li> <li>- Two aboriginal sites (CA-SBr-5872 and CA-SBr-7508) shall be evaluated by application of the sparse Lithic Scatter program.</li> </ul> </li> <li>• <b>Mitigation Measures</b> <ul style="list-style-type: none"> <li>- The Applicant shall construct a chain link fence, with no gate, around the Hart townsite cemetery and post a descriptive sign within the fence.</li> <li>- The Applicant shall implement an informational program for employees in order to increase their awareness of the value of cultural</li> </ul> </li> </ul>	<p><b>LAND USE</b></p> <ul style="list-style-type: none"> <li>• <u>Grazing</u> <ul style="list-style-type: none"> <li>- The Applicant shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by BLM.</li> <li>- Cattleguards shall be installed and maintained by the Applicant at points where cattle control fences cross the access roads.</li> <li>- If project activities inhibit use of watering facilities by cattle, the Applicant shall provide alternate water sources, in accordance with requirements of BLM.</li> <li>- Grazing lessees shall be compensated by the Applicant for livestock killed or injured by vehicles driven by project employees.</li> <li>- At the discretion of BLM, the abandoned tank, troughs, and corral in Section 23 shall be removed and disposed of by the Applicant.</li> </ul> </li> <li>• <u>Recreation</u> <ul style="list-style-type: none"> <li>- The Applicant shall provide a viewpoint at the Castle Mountain Project site, describing past and present gold mining operations in the area. The interpretive site shall be located at a point overlooking both the old Hart Townsite and the Lesley Ann Pit. The interpretive site shall include descriptive information about mining and the Hart Mining District.</li> <li>- An historical marker shall be placed along the Mitigated Access Route at a location where the railroad bed of the former Barnwell and Searchlight Railroad is noticeable. The marker shall include a brief description of the history of the railroad.</li> </ul> </li> </ul>



### 3.3 ALTERNATIVE MITIGATION MEASURES CONSIDERED

1. Complete backfilling of the project mine pits with overburden and/or leached ore was evaluated in the Draft EIS/EIR (Section 3.3.1.2, Alternative Overburden and Processed Ore Disposal). Based upon technical constraints and environmental considerations this activity was eliminated from further consideration in the Draft EIS/EIR.
2. Some commenters on the Draft EIS/EIR and Supplement emphasized considerable interest in mine pit backfilling and urged that several other backfilling scenarios be examined as mitigation measures for vegetation and wildlife habitat, and visual resources. The Draft EIS/EIR analysis for technical and environmental factors affecting backfilling at the Castle Mountain Project Site has therefore been expanded in this Final EIS/EIR in response to these comments. Alternative mitigation measures for mine pit backfilling will therefore be considered by the BLM and County. This section is organized to first provide a background discussion on open pit metal mining and backfilling and specific considerations for the Castle Mountain Project ore deposits. Three methods of mine pit backfilling are evaluated, consisting of:
  - Maximum Pit Backfilling
  - Sequential Pit Backfilling
  - Scree Slope Backfilling

#### 3.3.1 INTRODUCTION

##### 3.3.1.1 Open Pit Metal Mining and Backfilling

1. Disseminated mineral deposits, such as at the Castle Mountain site, contain gold mineralization in the form of particles that are distributed through large bodies of host rock, requiring open-pit mining procedures. Such gold deposits usually have no clear physical demarcation between ore grade material (i.e., that which can be mined at a profit) and lower grade mineralized rock that cannot be profitably recovered under the prevailing combination of metal prices and processing costs. As such, increases in metal prices or decreases in mining or processing costs change the economic conditions, allowing lower grade mineralized material to be profitably processed.
2. Open pit mine optimization is achieved by extending the pit to the point where the costs of removing overlying volumes of unmineralized "waste" rock just equal the revenues from the ore being mined in the walls and bottom of the pit. Because there is usually mineralization

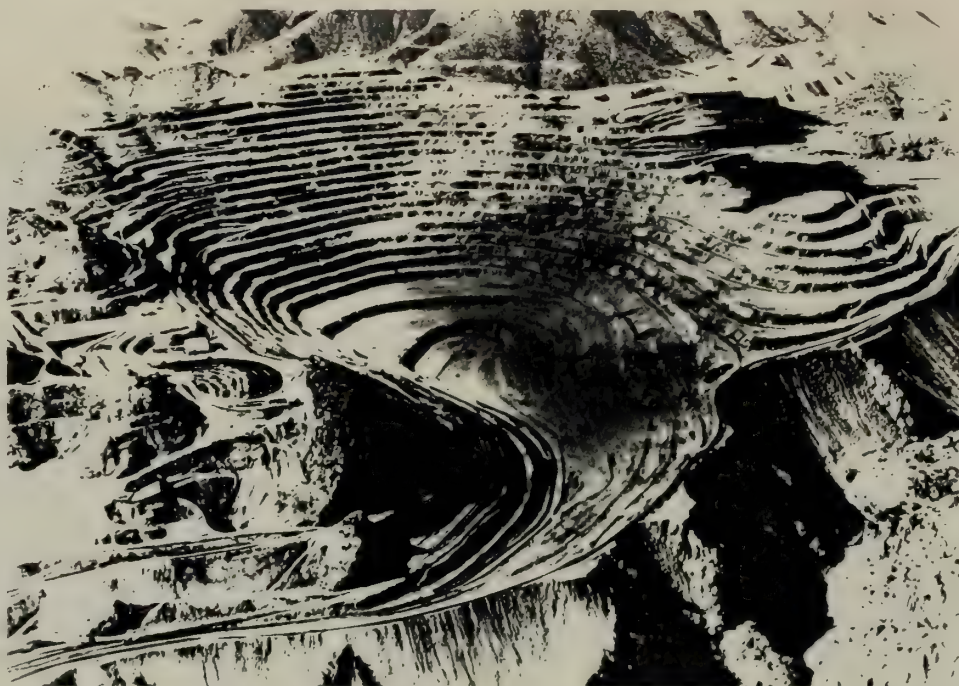
remaining, favorable changes in an economic factor (such as an increase in the price of gold or new technology resulting in a reduced operating cost) can result in a condition where mining can be expanded, or resumed at a future time. This economically-determined pit configuration is typical of the open pit metal mining industry and is of critical importance in efforts to maximize the recovery of the mineral resource.

3. Figure 3.4 (Open Pit Mine Photographs) illustrates the "conical" pit configuration used in *open pit mining* which precludes pit backfilling until the last ton of currently economical ore is removed. Were backfilling to be planned, each ton of waste rock excavated and hauled out of the pit would need to be placed into temporary storage. After mining had been completed, the stored material would have to be reloaded into trucks and hauled back to the pit. In that case, the resources contained in the disseminated mineralization remaining in the pit walls and floor would probably not be recoverable, since these resources could not provide sufficient income to warrant a second removal of the backfilled rock. As explained in recent memoranda from the U.S. Department of the Interior, Bureau of Mines (Bureau of Mines) to the BLM California State Director:

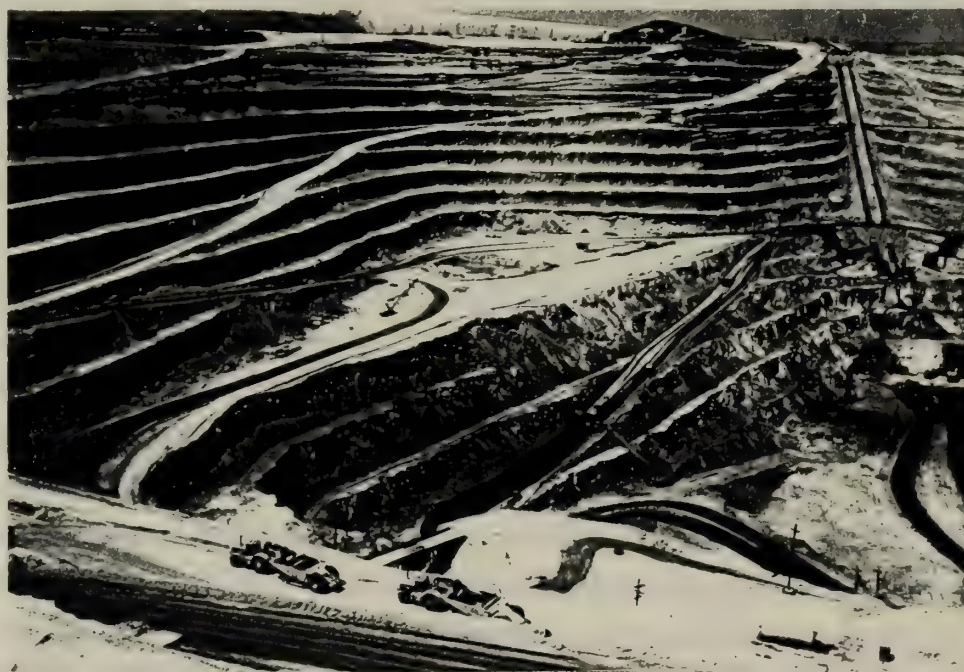
"Most gold mines are excavated in progressively deeper cuts. To recover all the known resource, the entire pit must remain exposed. The overall extent and dimensions of the orebody are generally not known until the conclusion of mining. Backfilling could not begin until the deposit is completed, leaving reclamation work to begin at the conclusion of mining operations when there is no revenue to the operation. This is different from coal or phosphate mines, which usually are near surface, flat, and easily defined, so they can be backfilled as mining progresses along the seam" (see correspondence in Appendix I).

4. The development of the Surface Mining Control and Reclamation Act of 1977, as amended (SMCRA) (30 U.S.C. §1201), resulted in a requirement for backfilling of coal mining operations. SMCRA requires coal mines to grade and compact using available overburden and other waste materials to restore the approximate original contour. Similar Federal legislation for open pit metal mines does not exist. Surface mining of coal can often feasibly accommodate backfilling because the coal reserve usually occurs in the form of a flat-lying bed, at shallow depth over a large spatial area. In such circumstances, coal mining involves a method known as *strip mining*, illustrated in Figures 3.5 (Strip Mine Method Photographs) and 3.6 (Strip Mine Method Photograph). In this mining method, topsoil is removed and





Large open pit metal mine. Overburden must be hauled out of the pit and disposed of in overburden piles such as that in the upper right hand corner of this photograph, several thousand feet away from the pit.



Close-up of open pit mine showing steep slopes. Large intermediate flat bench running diagonally across the center of the photograph will be mined, moving the lower pit wall to the left, as pit expands both horizontally and vertically over time. Note also the vertical depth of the pit, as compared to a coal strip mine, which is typically much shallower.

FIGURE 3.4

## OPEN PIT MINE PHOTOGRAPHS

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.





Coal strip mine with dragline removing overburden.



Aerial view of coal strip mine. Note that overburden can be disposed of in one continuous operation. Dragline excavates material from the trench and swings load across to the overburden pile with no intermediate rehandling.

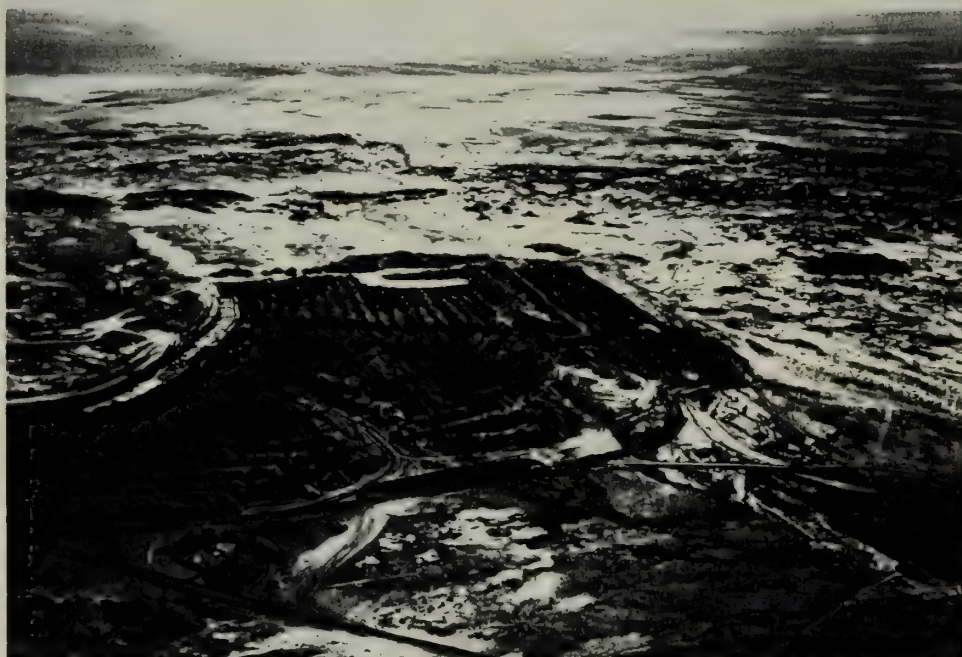
FIGURE 3.5

## STRIP MINE METHOD PHOTOGRAPHS

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.





Coal strip mine ready for reclamation. Note parallel windrows of overburden ready for recontouring. The coal has been excavated in a series of trenches moving from right to left across the photograph. Ditch at extreme left of disturbed area is where last coal was excavated from the seam.

FIGURE 3.6

**STRIP MINE METHOD  
PHOTOGRAPH**

CASTLE MOUNTAIN PROJECT

**ENVIRONMENTAL SOLUTIONS, INC.**

stockpiled, after which a large excavator strips the overburden from the coal bed. Since the bed of coal is at a relatively constant and reasonably shallow depth beneath the surface, the method lends itself to a continuous sequential process whereby overburden can be returned to an adjacent area from which the coal has been removed. Accordingly, there is no cost to stockpile and then rehandle the excavated material.

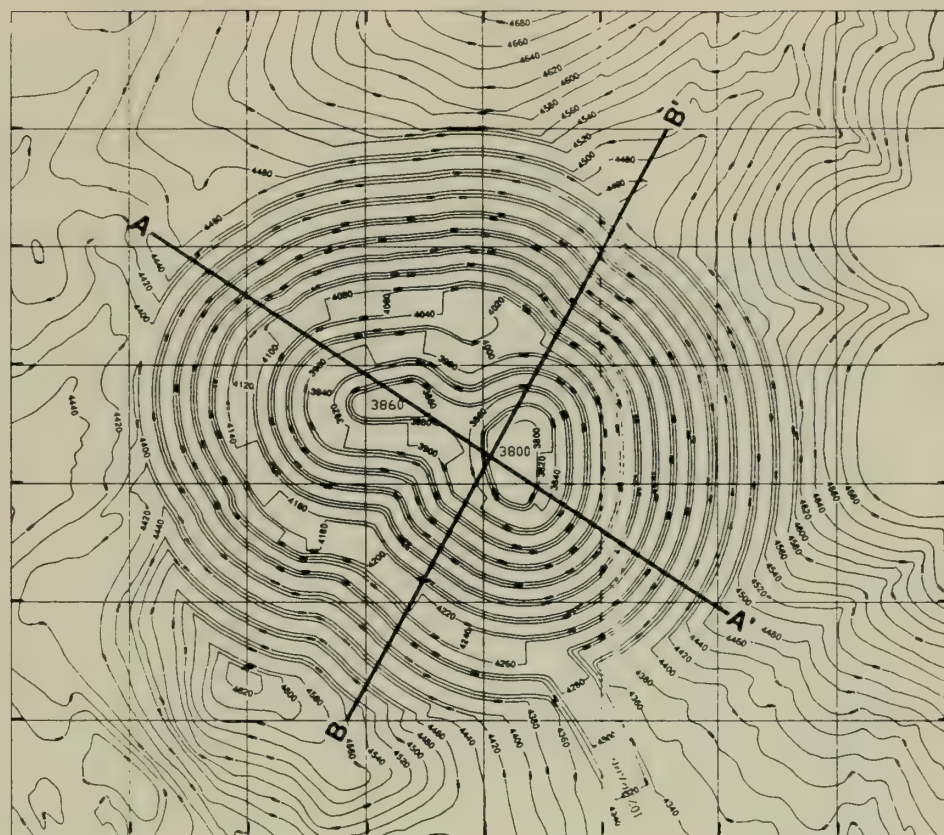
5. The strip mining type of backfilling cannot be employed in most open pit mining situations, because the ore configuration is not usually flat, and mining results in a cone-shaped excavation as shown in Figure 3.5. Under certain circumstances, where multiple pits are being sequentially excavated, it is feasible to backfill one mined-out pit concurrently with mining of a subsequent pit. Factors normally considered in deciding to backfill a previously mined pit are that the surrounding wall rock and floor of the pit are devoid of mineralization that could be economic to recover under reasonably foreseeable circumstances, and that backfilling can be achieved at a reasonable cost.
6. In conjunction with the passage of SMCRA, Congress also directed that an investigation be completed on reclamation of non-coal mines, including the potential for backfilling. A report sponsored by CEQ, entitled: *Surface Mining of Non-Coal Minerals*, was prepared by the National Research Council (NRC). The difference between open pit metal mining and surface coal mining with respect to backfilling is illustrated in the following conclusions from that study:
  - "Active open pits, as compared with surface coal mines, provide little opportunity (if any) for simultaneous mining and reclamation because the pit continues to expand and deepen as long as the mine is producing. Also, the ultimate depth and shape of the pit, although roughly predictable, are dictated by the economics of mining and the geometry of the ore deposit rather than by particular reclamation goals. Indeed, the very size of a large open pit would make restoration by backfilling, or even by reshaping, an enormous economic burden of uncertain benefit . . . and inactive open pits could be reactivated if economic conditions became favorable. Thus, in practical terms, reclamation of open pits is limited to planning for the placement of rock dumps and tailings ponds that will remain when the mining operation is closed. Principles of landscape design can be applied at little additional cost in placing these materials in a manner that achieves beneficial post-mining land use . . ."
  - "Often ore from six or eight pits or mines is blended in order to maximize efficiency and minimize processing costs. This procedure extends the life span of each mine and delays the period of reclamation. This situation contrasts markedly with a coal mine in which overburden is stripped, coal is removed, and the mined-out area is reclaimed in a single orderly sequence" (NRC, 1979).



### 3.3.1.2 Castle Mountain Project Backfilling Constraints and Opportunities

#### 3.3.1.2.1 Known Mineralization and Potential Reserves

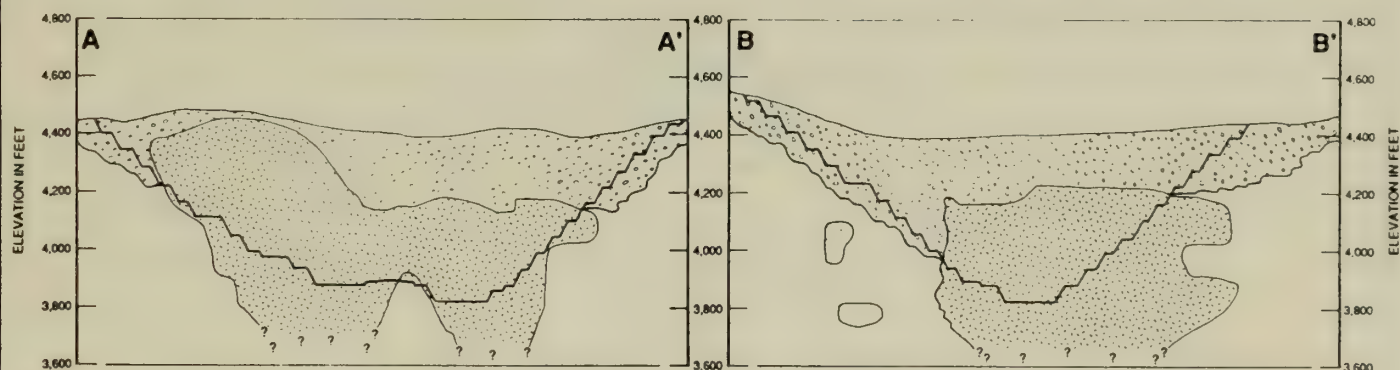
1. The potential loss of additional mineral reserves, and technical and economic constraints of backfilling for open pit mining, as discussed in the previous section, are applicable to the Castle Mountain Project. Diagrams showing cross sections of the Castle Mountain Project disseminated gold deposits are shown in Figure 3.7 (Lesley Ann Pit Design and Known Mineralization) and Figure 3.8 (Oro Belle Pit Design and Known Mineralization). The pit configurations have been designed to allow the miners to reach the ore, while maintaining a safe operating environment. The pit designs are based on the best available geologic and economic data.
2. The open pit configurations for the Castle Mountain Project have been designed based upon a number of parameters, consisting of:
  - Gold content of the rock
  - Gold recovery
  - Gold price
  - Mining costs
  - Processing costs
  - Pit wall slope stability
  - Physical or legal boundary constraints
3. Based upon a systematic assessment of each of these parameters, current pit designs shown in the Draft EIS/EIR (Table 3.2.1, Estimated Mine Pit Characteristics) would accommodate extraction of about 20 million tons of ore (proven and probable reserves). In addition, there will be approximately five million tons of protore accumulated in a low grade stockpile adjacent to the primary crusher. This material would be processed after higher grade ores had been treated.
4. As shown in Figures 3.7 and 3.8, gold mineralization continues past the planned limits of the pit floor and walls. Changes in conditions because of improved technology and fluctuating gold prices can result in a revised pit design.



**SITE PLAN**

0 400 800 FEET

SCALE



**CROSS SECTIONS A-A' AND B-B'**

**LEGEND**

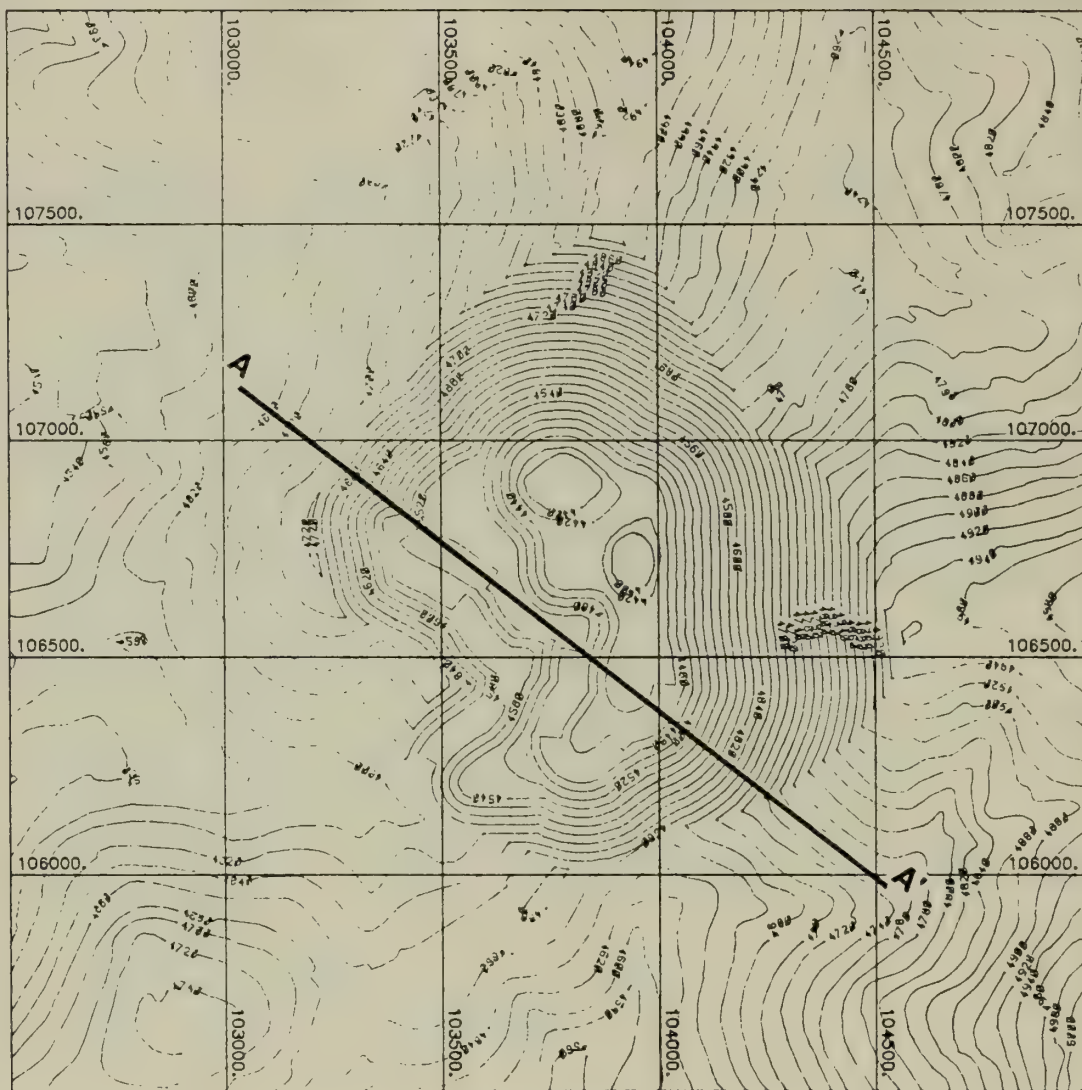
- PLANNED PIT BOUNDARY
- ▨ OVERBURDEN
- ▩ DISSEMINATED GOLD MINERALIZATION

**FIGURE 3.7**

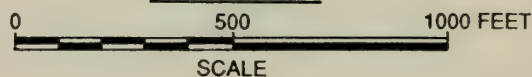
**LESLEY ANN PIT DESIGN  
AND  
KNOWN MINERALIZATION**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.








**PIT DESIGN**



**CROSS SECTION A-A'**

**LEGEND**

-  OVERBURDEN
-  DISSEMINATED GOLD MINERALIZATION
-  BARREN OR LOW GRADE ROCK

**FIGURE 3.8**

**ORO BELLE PIT DESIGN  
AND  
KNOWN MINERALIZATION**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

5. The current pit designs, however, do not provide for extraction of all the available mineral resources. As explained by the NRC:

- "Changing economics often dictate that portions of ore bodies left behind in the past because they were uneconomic become economically available at some future time. One reason for this may be increased demand due to economic growth as supplies are diminished through depletion of the highest quality, most easily available deposits. Another reason is the development of new mining or metallurgical technology that improves the efficiency of recovery or diminishes production costs. Reopening of old mines may also be the result of the demand for by-products or changes in the price of by-products that can make the abandoned deposit economic once again" (NRC, 1979).

Similarly, as the Bureau of Mines recently indicated in a memorandum:

- "Mining in specific localities traditionally occurs in cycles, usually in conjunction with fluctuations in metal price. A mine that is currently uneconomic, could easily become economic again at a future date when commodity prices rise. By backfilling the pit, you essentially preclude recovering any additional minerals in the future when the pricing climate is more favorable. This same scenario is also true for changing technology, where a new processing technique may be developed in the future allowing current uneconomic deposits to be profitable. Backfilling a pit essentially makes potential future ore unavailable for subsequent development" (see correspondence in Appendix I).

6. For the Castle Mountain Project, additional known resources in the walls and floor of these pits includes an estimated 10.5 million tons in the Lesley Ann pit and 4.8 million tons in the Oro Belle pit. These possible resources are based upon a 35 percent increase in the price of gold (to about \$600/ounce), which, though not currently foreseeable, is a possibility, based upon the pricing history of this metal during the past decade. Favorable variances in one or more of the parameters identified above, or improved technology, could also result in expanded resources.

7. If the lower grade materials left behind are buried due to backfilling requirements, the cost of recovering them in the future may be so high that they become entirely lost as a resource (NRC, 1979). Were the Castle Mountain Project mine pits to be backfilled, it has been estimated by the Applicant that recovery of gold remaining in the walls and floor of the Lesley Ann pit following backfilling would require a minimum gold price of \$1,100 per ounce. This is because the remaining mineralization would need to be valuable enough to warrant re-mining backfilled material from the pits. This compares to an estimated \$600 per ounce to continue mining the remaining mineralization if it had not been covered with backfill. The



mineral resource cost of backfilling for the Castle Mountain Project would therefore be the loss of at least 15.3 million tons of possible reserves since the cost of re-excavation following backfilling would preclude future mining under reasonably foreseeable metal prices. The Bureau of Mines has recognized the importance of future access to these mineral resources in its comment letter on the Draft EIS/EIR (see Section 4.2.1.1, Letter 3: U.S. Department of the Interior, Bureau of Mines, of this Final EIS/EIR).

8. If the leached ore (rather than overburden) were to be backfilled to the mine pits, additional possible resources would be lost. As further explained by the NRC:
  - "The creation of economic reserves over time owing to price increases is not limited to the orebody itself. No metallurgist can extract all of the valuable product from the rock. As a result, waste rock or tailings from an existing mine are often reworked using more efficient technology, and this is usually considered in planning mine operations and the placement of waste rock and tailings" (NRC, 1979).

Average gold recovery at the Castle Mountain Project is expected to be approximately 65 percent. This means that there will be at least 300,000 ounces of gold remaining in the heap leach piles when they are decommissioned. Future improvements in extraction technology may provide for additional recovery of the residual gold from the leached piles. However, were the leached ore backfilled to the pits, it would need to be re-mined at additional cost before processing to recover this residual gold could occur, with associated additional environmental effects.

9. The 43 CFR 3809.0-5 definition for reclamation states:
  - "Reclamation may not be required where the retention of a stable highwall or other mine workings is needed to preserve evidence of mineralization."

In addition to the loss of potentially recoverable ore, geologists rely on rock exposures, especially with evidence of mineralization, as a primary source of information to guide their search for additional mineralization. Backfilling would preclude or seriously impair the geologists' ability to use information in the pit walls in their search for additional ore.

10. Improved technologies, more sophisticated equipment, and the demand for gold have been the driving factors in successive phases of mining in the Hart Mining District. Based on historical patterns, it is to be expected that the future will bring more cycles of mining in the Hart Mining District.

### 3.3.1.2.2 Technical Constraints to Backfilling Project Mine Pits

1. Once an open pit has been mined, it is generally not possible to replace all the material excavated from the pit, or to restore the land surface to its former condition, due to physical constraints. Broken rock occupies a much greater volume than solid rock. As a result of this expansion or "swell factor", all of the rock that has been broken and removed from a pit during mining will not fit back into the pit. As explained by the NRC:
  - "... waste and tailings resulting from mining and processing expand an average of about 30 to 40 percent, and very few mines take out enough ore to leave space in the mine workings to backfill all waste and tailings. Thus, even if the huge cost of backfilling were incurred, waste and tailings would still remain on the surface at many mines . . . " (NRC, 1979).
2. Rock volumes and expected expansion factors for the Castle Mountain Project are shown in Table 3.2 (Castle Mountain Project Ore and Overburden Volumes). As indicated in the table, the total volume of the mined rock would be about 61.2 million cubic yards, or 36 percent greater than its volume prior to excavation. This means that replacement of all the mined rock back into the pits is not physically possible.

### 3.3.1.2.3 Economic Constraints to Backfilling Project Mine Pits

1. As previously discussed, the physical configuration of coal strip mines allows for backfilling procedures to be implemented concurrently with coal mining operations. Accordingly, the cost for that reclamation activity is relatively small and the reclaimed land value is usually greater than the cost of its reclamation. In contrast, for most open pit metal mines the value of the reclaimed land would be substantially less than the costs of backfilling.
2. In its evaluation of open pit mining and backfilling, the NRC reported on backfilling costs as follows:
  - "... the assumption of backfilling to original contour leads to some of the highest estimates of [reclamation] costs, ranging from \$55 million to \$3.2 billion for individual metal mines . . ." (NRC, 1979).
3. The effect of backfilling on profitability of open pit mines is also illustrated by a statement made to a recent Congressional Committee Hearing on reclamation and bonding for hard rock minerals:



**TABLE 3.2**  
**CASTLE MOUNTAIN PROJECT<sup>(1)</sup>**  
**ORE AND OVERBURDEN VOLUMES**

MATERIAL TYPE	PRE-MINING VOLUME (cubic yards)	POST-MINING VOLUME (cubic yards)	ADDITIONAL SWELL (cubic yards)
ORE/PROTORE	15 million (30 MT) <sup>(2)</sup>	22.2 million (30 MT)	7.2 million
OVERBURDEN	30 million (60 MT)	39.0 million (60 MT)	9.0 million
<b>TOTAL</b>	<b>45 million (90 MT)</b>	<b>61.2 million (90 MT)</b>	<b>16.2 million</b>

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(1) Rock Volumes (coefficients of expansion):

- In-place rock: 13.5 cubic feet per ton.
- Overburden: 17.6 cubic feet per ton (30% expansion [range = 25 - 38%]).
- Ore/Protores (crushed and agglomerated): 20.0 cubic feet per ton (48% expansion).
- Average Swell Factor  $[(16.2/45) \times 100\%]$ : 36%

(2) MT = Millions of Tons.



- "In almost all cases, the cost of backfilling an open pit is prohibitive. The exception to that rule may occur when two or more orebodies can be mined sequentially with overburden from one excavation used to backfill the other; a situation structurally similar to current practice in some surface coal mines."
  - "The usual case, however, would require transporting remaining overburden from waste repositories to the open pit as backfill, a very expensive process. For example, in 1989, Pegasus Gold mined a total of 51.7 million tons of material (ore and waste) from its six operating mines. The direct cost of mining which excludes all capital investment, debt service, administrative overhead, exploration, ore processing, and marketing expense, and taxes, totalled \$50.8 million or \$1.02 per ton of material. In contrast corporate net profit totalled \$9.8 million or \$0.19 per ton of material. Backfilling the pits would cost \$0.83 per ton more than the corporation earned, and would, if required, by State or Federal statute, lead to the closure of the mines and bankruptcy of the firm. Other mining companies have different costs and profit margins, but there are few, if any, who can afford to backfill open pit excavations" (Pegasus Gold, 1990).
4. These conclusions are supported by recent Bureau of Mines memoranda to the BLM California State Director on this subject:
- "The single most significant aspect of backfilling open pits is cost. For a typical open pit operation, loading and hauling of material is the largest mining cost component (excluding mineral processing). Backfilling essentially doubles the cost of loading and hauling. This could make an otherwise profitable mine uneconomic to develop and operate" (see correspondence in Appendix I).
5. For the Castle Mountain Project, specific operational costs are considered by the Applicant to be proprietary. However, the Applicant has indicated that backfilling costs would burden the Castle Mountain Project to the extent that it would no longer be economically feasible.<sup>(1)</sup> In a letter to the BLM California State Director, the Applicant evidenced this position as reflected in the operating costs for 10 existing representative gold mines in California, Nevada, and Montana (see Appendix I, June 20, 1990 letter from Viceroy). The data presented indicates that cash costs for mining and processing to produce an ounce of gold averaged \$248 per ounce for these mines. Assuming a nominal cost of \$0.80 per ton of earth moved, backfilling could increase the average cash cost 41 percent to \$349 per ounce. Since the current average price of gold is about \$365 per ounce<sup>(2)</sup>, nearly all of these operations would be uneconomic at

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(1) At \$0.80 per ton, the Applicant has estimated that backfilling would cost in excess of \$41 million.

(2) London monthly average gold price per troy ounce as reported by *Metals Week*: U.S. \$374.242 (April, 1990), U.S. \$369.052 (May, 1990), U.S. \$352.331 (June, 1990).



present, when costs such as depreciation, depletion and amortization of sunk costs, corporate general and administrative expenses, ongoing exploration, interest on borrowed capital, royalties (if any), and income taxes are considered.

6. As an independent verification of the effects of backfilling costs on the economics of an open pit mining operation such as the Castle Mountain Project, the BLM requested an analysis by the Bureau of Mines. That analysis, included in Appendix I (see July 5, 1990 Memorandum to BLM California State Director from the Bureau of Mines) is based upon a model using the following parameters:

- Open pit mine, heap leach/carbon column processing
- Reserves of 26,000,000 tons of ore
- 0.055 troy ounce per ton gold grade
- 75 percent recovery of gold
- Nine year mining life
- 2:1 stripping ratio
- 8,000 tons ore per day, 16,000 tons waste per day
- Three shifts per day, 360 days a year
- 2,500 feet average haul distance

The economic parameters for mine type, operational life, processing rate, and annual days of operation are similar to those for the Castle Mountain Project. However, the model uses more favorable figures for average ore grade, stripping ratio, and recovery, and a shorter average haul distance than the Castle Mountain Project. The hypothetical model is therefore more economically attractive than the Castle Mountain Project.

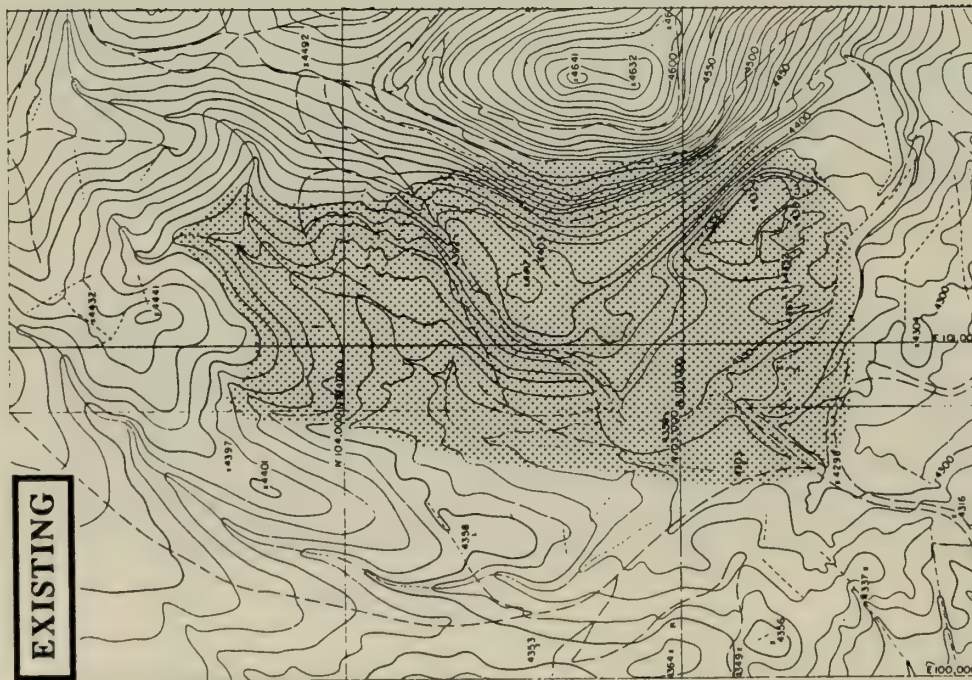
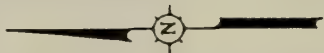
7. The results of the Bureau of Mines economic analysis demonstrate that for the mine model with a gold price of \$400 and 15 percent rate of return on the capital investment, backfilling would make an otherwise profitable operation unprofitable, resulting in a negative net present value of \$13 million.

#### 3.3.1.2.4 Opportunities for Backfilling Existing Mine Pits

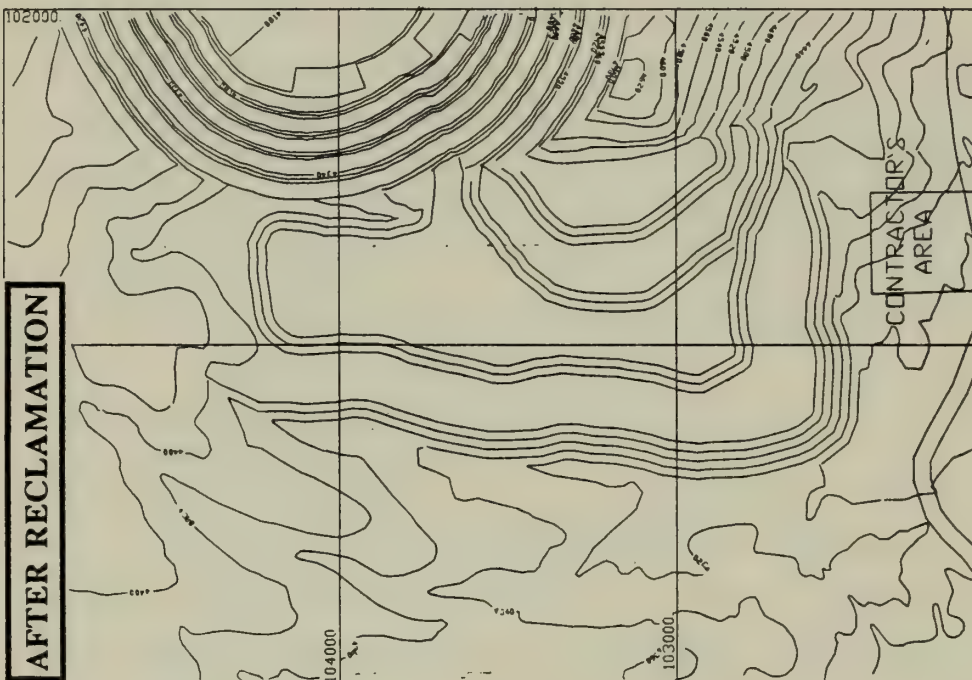
1. Two clay quarries at the Hart Mining District have been mined intermittently for about the last 60 to 70 years. At present, the surface disturbances cover about 110 acres. Both clay quarries are located on private lands. Since they were developed prior to the passage of SMARA, there is no legal requirement that they be reclaimed by their present or past owners. In the absence of the Castle Mountain Project, these quarries would remain in their present unreclaimed state indefinitely.

2. The South Clay pit on Big Chief Hill is in sharp contrast to the surrounding landscape, due to its very light color and prominent location at the base of the Castle Mountains (see Draft EIS/EIR Figure 2.1.1, Aerial Photograph of Castle Mountains). The Applicant purchased the South Clay pit in late 1988, in order to reclaim and revegetate it concurrent with project activities. To further this reclamation effect, the Applicant recently purchased the North Clay pit. This clay quarry could also be reclaimed as part of the reclamation activities associated with the Castle Mountain Project. This form of sequential backfilling is possible because the clay product from these quarries is not of significant value or in high demand. However, approximately 12,000 tons of clay will be excavated and stockpiled to satisfy future needs.
3. The South Clay pit was formed by excavation of the west face of Big Chief Hill. Backfilling activities for the South Clay pit would involve placement of approximately 4.5 to 5 million tons of overburden produced during the mining of the Lesley Ann pit in four terraces on the floor and wall of the South Clay pit. The grading plan for this area is shown in Figure 3.9 (South Clay Pit Backfilling Plan). The base of the lowest terrace would be at an elevation of about 4300 feet above sea level. The top of the upper terrace would be at an elevation of 4520 feet. The crest of Big Chief Hill would be an additional 100 feet above the top of this terrace.
4. The North Clay pit is a shallow bowl located in a gently sloping area at the base of the Castle Mountains. Backfilling activities for the Oro Belle pit would involve placement of approximately 4 to 4.5 million tons of overburden produced during the mining of the Oro Belle pit in five terraces in the shallow bowl, as shown in Figure 3.10 (North Clay Pit Backfilling Plan). The base of the lowest terrace would be at an elevation of about 4470 feet above sea level. The top of the upper terrace would be at an elevation of 4580 feet. The hills adjacent to the east side of the quarry rise steeply to elevations of over 5,000.
5. Since the sequential backfilling of the clay quarries would be accomplished in conjunction with mining operations, no additional equipment would be required. Environmental effects, such as water use and air emissions, would be reduced due to shortened haul distances. Reclamation of these clay pits would reduce the overall color contrasts created by mining in the Hart Mining District. Further, the clay pit reclamation would offset vegetation and wildlife habitat disturbance.
6. The Proposed Action therefore incorporates plans for sequential backfilling of previously mined pits in a manner that provides a recognized beneficial environmental effect. The reason





AREA TO BE BACKFILLED  
AND RECLAIMED



CONTRACTOR'S  
AREA

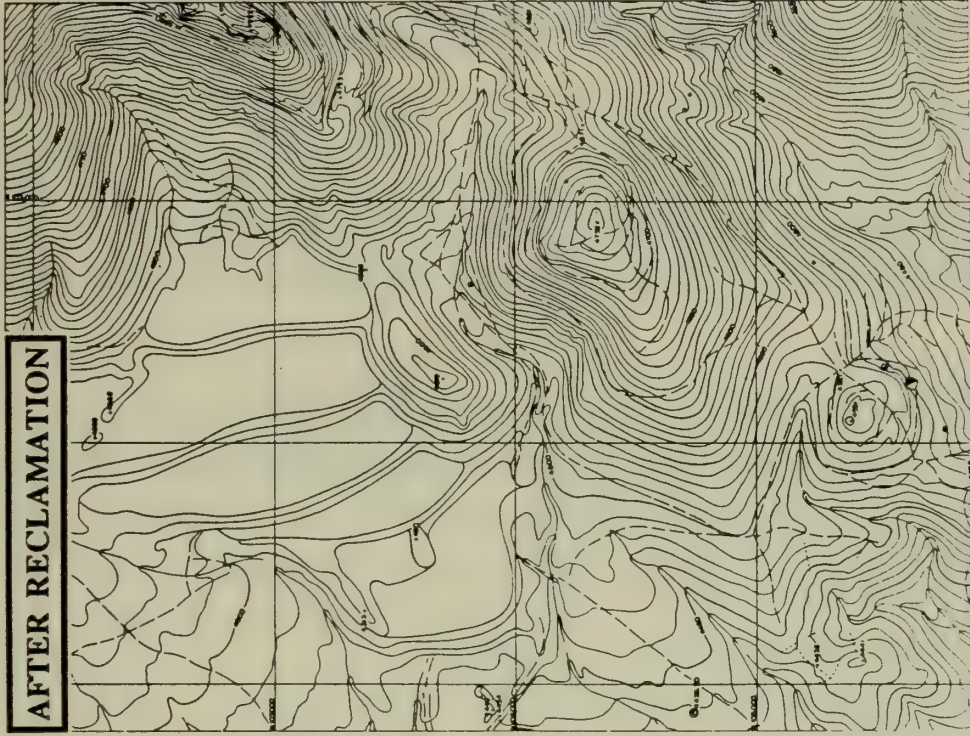
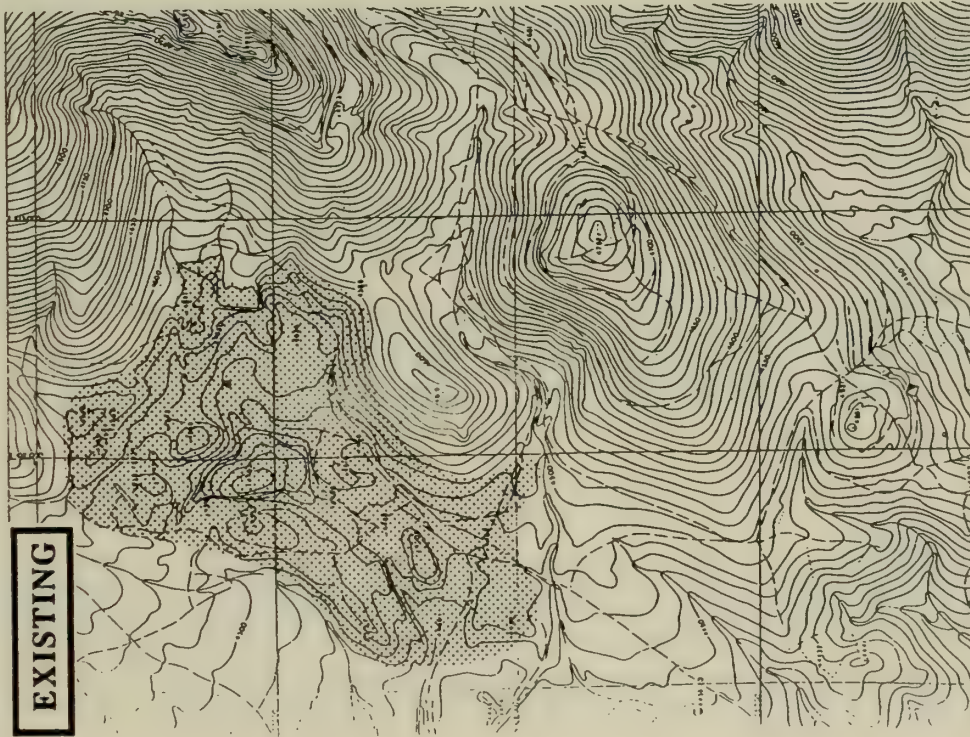
FIGURE 3.9

# **SOUTH CLAY PIT BACKFILLING PLAN**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.





AREA TO BE BACKFILLED  
AND RECLAIMED



FIGURE 3.10

**NORTH CLAY PIT  
BACKFILLING PLAN**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.



that this backfilling is able to result in an important visual benefit is because the clay quarries are located on slopes that face Lanfair Valley. Reclamation of these slopes will therefore benefit a large viewshed.

7. The Applicant has also incorporated backfilling of the clay quarries because it is consistent with best industry practices in performing reclamation concurrent with mining activities without costly rehandling, and in a manner that does not jeopardize potential future mineral resources.

### 3.3.2 MINE PIT BACKFILLING ALTERNATIVE MITIGATION MEASURES CONSIDERED

1. In response to public input, three methods for backfilling the project mine pits have been developed for evaluation. Each of these backfilling methods is evaluated assuming that it would be completed in conjunction with, or subsequent to, the Proposed Action. The discussion of each alternative includes an explanation of the Applicant's technical and economic considerations. The considered methods include:
  - Maximum Mine Pit Backfilling
  - Scree Slope Backfilling
  - Sequential Mine Pit Backfilling
2. The objective of these mitigation methods would be to incorporate some form of backfilling into the Proposed Action for the Oro Belle and/or Lesley Ann pits as mitigation for visual resources and wildlife habitat. As these pits are located in a drainage in the Castle Mountains, views of the pits from locations in Lanfair Valley are restricted to the upper pit walls.
3. The backfilling methods are described and evaluated for their environmental effect in the following sections. Each method is compared to the Proposed Action in terms of its unavoidable environmental consequences in Table 3.3 (Proposed Action and Backfilling Mitigation, Comparative Unavoidable Adverse Impacts). The impacts are noted as being "greater," similar," or "less" than the Proposed Action. Supporting information is expressed quantitatively where possible, or qualitatively, as appropriate, and discussed in detail in the respective sections of this chapter.

#### 3.3.2.1 Maximum Pit Backfilling

1. This method has been proposed in order that the project fill the mine pits to the degree possible, in an effort to both reconstruct pre-mining topography in the lower portions of the project mine pits, and reduce the amount of rock placed elsewhere onsite.

TABLE 3.3

**PROPOSED ACTION AND BACKFILLING MITIGATION,  
COMPARATIVE UNAVOIDABLE ADVERSE IMPACTS**

Page 1 of 2

RESOURCE CATEGORY	PROPOSED ACTION	MAXIMUM PIT BACKFILLING	SCREE SLOPE BACKFILLING	SEQUENTIAL PIT BACKFILLING
<b><u>WATER RESOURCES</u></b>				
1. Water Use	1. <b>Impact:</b> About 725 acre-feet would be consumed annually (7,250 acre-feet for 10-year operation).	1. <b>Greater Impact:</b> Backfilling activities would require an additional 425 acre-feet for a total consumption of 7,675 acre-feet.	1. <b>Greater Impact:</b> Backfilling activities would require an additional 363 acre-feet for a total consumption of 7,613 acre-feet.	1. <b>Similar Impact:</b> Increased haulage distances for overburden would require a limited additional quantity of water for dust control.
2. Potential Effect to Piute Spring	2. <b>Impact:</b> No impact is expected, based on the detailed analysis of Lanfair Valley aquifer volume, transmissivity, recharge, and distance to Piute Spring.	2. <b>No Impact:</b> While the total amount of withdrawal would be about six percent times greater than the Proposed Action, the impact to the Lanfair Valley aquifer would still be confined to the northeastern portion of the basin. No impact to Piute Spring would be expected.	2. <b>No Impact:</b> While the total amount of withdrawal would be about five percent greater than the Proposed Action, the impact to the Lanfair Valley aquifer would still be confined to the northeastern portion of the basin. No impact to Piute Spring would be expected.	2. <b>No Impact:</b> As for the Proposed Action, no impact to Piute Spring would be expected.
<b><u>VEGETATION</u></b>				
1. Vegetation Community Disturbance	1. <b>Impact:</b> About 915 acres of vegetation would be disturbed in the creosote bush scrub/Joshua tree woodland/desert grassland and blackbush scrub communities. Revegetation may take an extended time period for complete recovery.	1. <b>Similar Impact:</b> About 915 acres of vegetation would be disturbed in onsite communities and for access improvements. However, an additional 104 acres could be revegetated in the filled pits reducing the onsite disturbance in the long term.	1. <b>Greater Impact:</b> An additional 68 acres would be disturbed for haul roads to provide access to the top of the pit high walls.	1. <b>Similar Impact:</b> About 915 acres of vegetation would be disturbed in onsite communities and for access improvements. However, an additional 16 acres could be revegetated in the partially filled Lesley Ann Pit reducing the onsite disturbance in the long term.
<b><u>WILDLIFE</u></b>				
1. Habitat Impact	1. <b>Impact:</b> About 915 acres of wildlife habitat would be disturbed. Onsite forage habitats available for use by the desert tortoise and special interest species such as bighorn sheep and raptors would be depleted in areas disturbed. Revegetation may take an extended period of time.	1. <b>Similar Impact:</b> About 915 acres of wildlife habitat would be disturbed.	1. <b>Greater Impact:</b> An additional 68 acres would be disturbed for haul roads to the top of the pit high wall.	1. <b>Similar Impact:</b> About 915 acres of wildlife habitat would be disturbed.
2. Wildlife Impact	2. <b>Impact:</b> Daily project traffic from operations could affect wildlife. Noise in the vicinity of operations and vehicle traffic on access roads could result in wildlife fatalities for the 10-year life of the project.	2. <b>Greater Impact:</b> The duration of daily traffic (about 16 ADT) would be extended approximately three years.	2. <b>Greater Impact:</b> The duration of daily traffic (about 16 ADT) would be extended approximately 1.5 years.	2. <b>Similar Impact:</b> Backfilling activities could be completed concurrent with operations.

**EXPLANATION:**

This table compares the anticipated unavoidable adverse impacts of each mitigation method to those associated with the Proposed Action. The primary anticipated unavoidable effects of the Proposed Action are summarized for each environmental resource. Anticipated unavoidable effects of the backfilling activity are then compared to the effects of the Proposed Action as 'greater', 'similar', or 'less' impact. Where no unavoidable adverse environmental effect is expected, 'no impact' is shown. Supporting information is cited quantitatively where possible, or qualitatively, as appropriate.

As discussed in the Draft EIS/EIR (Section 7.0, Unavoidable Adverse Impacts), and based upon the regulatory requirements and mitigation measures that would be incorporated into the project design, most of the identified effects would be mitigable to a level of no significant impact. However, there would be some unavoidable adverse impacts to the resource categories listed above. Five additional resource categories are addressed in the Draft EIS/EIR (Geology, Cultural Resources, Environmental Health and Safety, Socioeconomics, and Infrastructure), but are not discussed in this comparison, because they could be mitigated or are considered to be positive.





TABLE 3.3

**PROPOSED ACTION AND BACKFILLING MITIGATION,  
COMPARATIVE UNAVOIDABLE ADVERSE IMPACTS  
(Continued)**

Page 2 of 2

RESOURCE CATEGORY	PROPOSED ACTION	MAXIMUM PIT BACKFILLING	SCREE SLOPE BACKFILLING	SEQUENTIAL PIT BACKFILLING
<b>AIR QUALITY</b>				
1. PM <sub>10</sub> Particulates	1. <b>Impact:</b> Up to 427 pounds of particulates would be generated daily during the 10-year operational life of the project.	1. <b>Greater Impact:</b> An additional three years of operations would increase the duration of particulates production. Up to 476 pounds of particulates would be generated daily.	1. <b>Greater Impact:</b> An additional 1.5 years of operation would increase the duration of particulates production. Up to 476 pounds of particulates would be generated daily.	1. <b>Similar Impact:</b> Backfilling activities could be completed concurrent with operations. There would be a limited increase in particulate emissions due to additional equipment operating.
2. Process and Fuel Use Emissions (ROC, NO <sub>x</sub> , SO <sub>2</sub> , CO)	2. <b>Impact:</b> Daily combustion emissions would total up to 4,411 pounds during the 10-year operational life of the project.	2. <b>Greater Impact:</b> An additional three years of operations would increase the duration of emissions production. Up to 2,783 pound of combustion emissions would be generated daily.	2. <b>Greater Impact:</b> An additional 1.5 years of operation would increase the duration of emissions. Up to 2,783 pounds of combustion emissions would be generated daily.	2. <b>Similar Impact:</b> Backfilling activities could be completed concurrent with operations. There would be limited increases in combustion emissions due to additional equipment operating.
<b>VISUAL RESOURCES</b>				
1. Operational Activities	1. <b>Impact:</b> Project activities and lighting would be visible from unobstructed viewing locations in Lanfair Valley for the 10-year project life.	1. <b>Greater Impact:</b> Project activities and lighting would be visible from unobstructed viewing locations in Lanfair Valley for the additional three years.	1. <b>Greater Impact:</b> Project activities and lighting would be visible from unobstructed viewing locations in Lanfair Valley for the 10-year project life.	1. <b>Similar Impact:</b> Backfilling activities could be completed concurrent with operations.
2. Site Topographic and Visibility Changes	2. <b>Impact:</b> Landform and color changes would modify the site's visual character. The sizes of the overburden pile and area of heap leach pads are based on processing about 30 million tons of ore.	2. <b>Similar Impact:</b> Backfilling changes to the sites visual character would not result in an overall improved visual contrast rating.	2. <b>Greater Impact:</b> Additional surface disturbance would occur. Extensive source slope could not be effectively revegetated.	2. <b>Similar Impact:</b> Backfilling changes to the site topography would generally be evident only to an observer at the pit perimeter.
<b>LAND USE</b>				
1. Livestock Grazing Forage Reduction	1. <b>Impact:</b> The 915 acres of vegetation removed by project activities would reduce livestock forage by about 37 animal unit months (AUMs) in the Lanfair Valley grazing allotment.	1. <b>Similar Impact:</b> The 915 acres of disturbance would reduce available livestock forage by about 37 AUMs.	1. <b>Similar Impact:</b> The 915 acres of disturbance would reduce available livestock forage by about 37 AUMs. Additional areas of disturbance are on steep slopes that are not grazed.	1. <b>Similar Impact:</b> The 915 acres of disturbance would reduce available livestock forage by about 37 AUMs.

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**EXPLANATION:**

This table compares the anticipated unavoidable adverse impacts of each mitigation method to those associated with the Proposed Action. The primary anticipated unavoidable effects of the Proposed Action are summarized for each environmental resource. Anticipated unavoidable effects of the backfilling activity are then compared to the effects of the Proposed Action as 'greater', 'similar', or 'less' impact. Where no unavoidable adverse environmental effect is expected, 'no impact' is shown. Supporting information is cited quantitatively where possible, or qualitatively, as appropriate.

As discussed in the Draft EIS/EIR (Section 7.0, Unavoidable Adverse Impacts), and based upon the regulatory requirements and mitigation measures that would be incorporated into the project design, most of the identified effects would be mitigable to a level of no significant impact. However, there would be some unavoidable adverse impacts to the resource categories listed above. Five additional resource categories are addressed in the Draft EIS/EIR (Geology, Cultural Resources, Environmental Health and Safety, Socioeconomics, and Infrastructure), but are not discussed in this comparison, because they could be mitigated or are considered to be positive.



### 3.3.2.1.1 Site Plan and Major Project Components

1. For both the Lesley Ann and Oro Belle pits, overburden would be replaced to reconstruct the approximate original valley floor drainage contour. The resulting pit configurations, shown in Figure 3.11 (Maximum Pit Backfilling Alternative Mitigation), indicate that the valley floor would be a broad drainage flanked on either side by flat terraces. Adjacent portions of the upper mine pit walls above the original level of the valley floor would not be backfilled because of safety and stability considerations associated with placing loose rock on these steeper slopes.
2. This backfilling method would essentially be a large earth-moving project which would be initiated following the approximate 10-year operational period of the Castle Mountain Project. Rock that had been removed from the pits during mining would be reloaded into trucks and returned to the pits. It is assumed that backfill material would be obtained from the overburden pile as the nearest source. Assuming the Lesley Ann and Oro Belle pits were refilled to the level of the approximate original valley floor drainage, about 34 million cubic yards of material would be moved back into the pits. Approximately 27 million cubic yards of mined material would still be left elsewhere onsite (primarily the heap leach pads). The backfilling project would involve surface activities on about 420 acres, of which 300 acres would be in the area of the overburden pile where material would be removed, and 120 acres would be in the mine pits where material would be deposited.

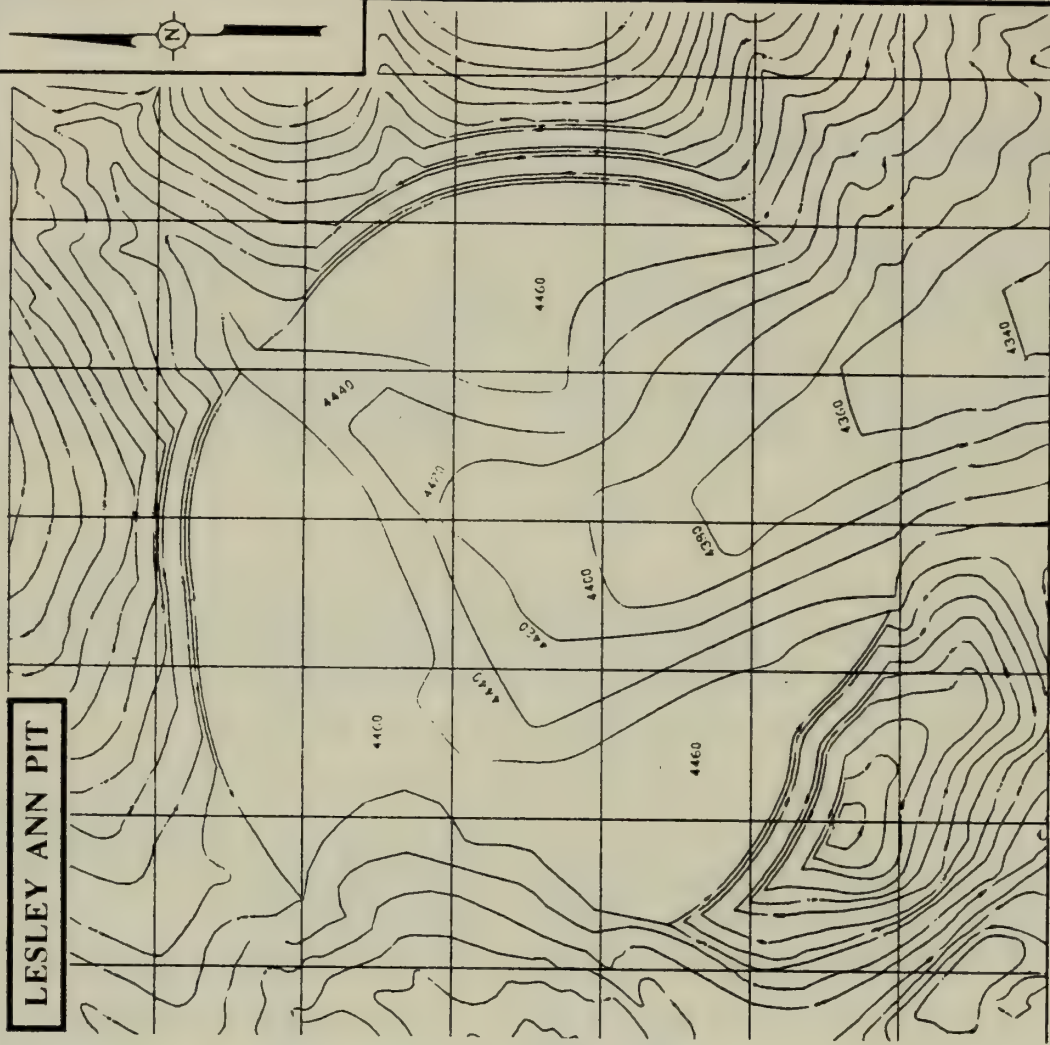
### 3.3.2.1.2 Utilities, Ancillary Structures, Equipment and Supplies

1. This mitigation measure would require about three years to accomplish, using the equipment listed below. About 650,000 man-hours of labor would be required for the backfilling project.

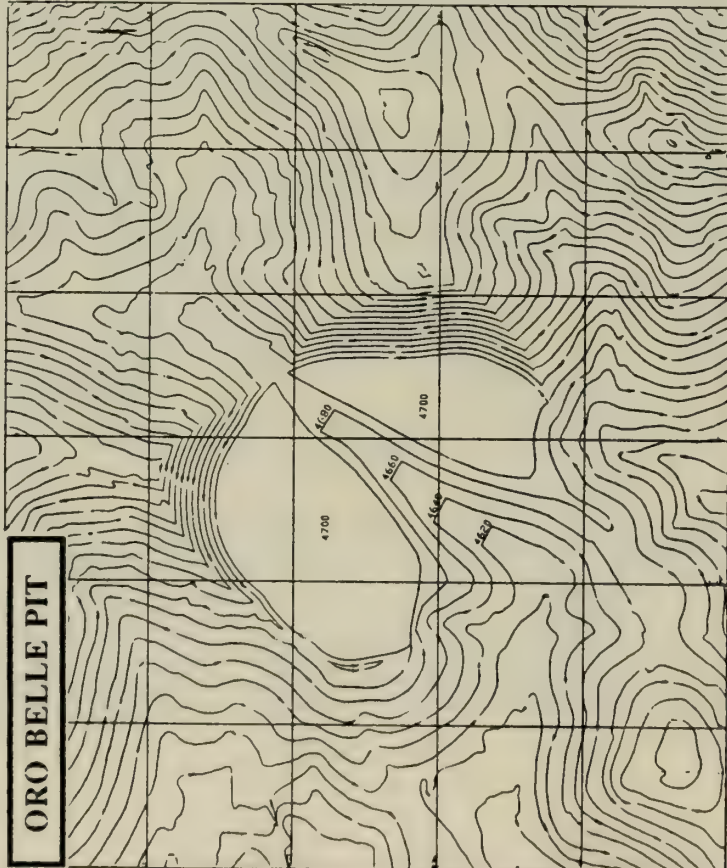
<u>Type</u>	<u>Nominal Size</u>	<u>Estimated Quantity</u>
Loading unit	13-cubic yard	3
Haul truck	85-ton	10
Motor grader	G-16 Class	1
Bulldozer	D-9 Class	3
Water truck	8,000-gallon	2
Lube and tool truck	3-ton	3
Pickup truck	3/4-ton	5
Passenger van	12-passenger	1
Bus	36- to 40-passenger	2



**LESLEY ANN PIT**



**ORO BELLE PIT**



**EXPLANATION:** THIS FIGURE SHOWS THE FINAL SURFACE CONTOURS THAT COULD OCCUR WITH BACKFILLING BOTH MINE PITS TO THE MAXIMUM DEGREE POSSIBLE. THE DESIGN PLAN WOULD INVOLVE PLACING OVERBURDEN IN THE PITS TO THE POINT WHERE WATER DRAINING DOWNSLOPE WOULD PASS THROUGH THE PIT AREA AND CONTINUE DOWN THE VALLEY.

**FIGURE 3.11**

**MAXIMUM PIT BACKFILLING  
ALTERNATIVE MITIGATION**

**CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.**

2. The fuel and oil used would include:

<u>Type</u>	<u>Use</u>	<u>Estimated Total Consumption</u>
Diesel fuel	Mine equipment, vehicles	5,610,000 gallons
Gasoline	Vehicles	100,000 gallons
Oils and lubricants	Mine equipment, vehicles	81,600 gallons

3. Water use is estimated at 138 million gallons (423 acre-feet).

#### 3.3.2.1.3 Project Traffic and Site Access

1. Project traffic is estimated at about 16 ADT as bussing would be provided. The Mitigated Access Route would be used.

#### 3.3.2.1.4 Environmental Impact

1. Since backfilling procedures would involve activities associated with mining (loading, hauling, and dumping of materials), the types of impacts from this project would be expected to be similar to those evaluated in the Draft EIS/EIR. The primary change would therefore be the *duration* of project effects, which would be extended until the backfilling project was complete. Anticipated unavoidable adverse environmental effects of maximum pit backfilling are shown in Table 3.3. The table shows that the additional project activity would result in a greater impact in the resource categories of water use, wildlife, air quality, and the operational activities of visual resources.
2. Water consumption would be about six percent greater than for the Proposed Action (about 425 acre feet) since the operational period would be extended. However, no impact to Piute Spring would be expected, based on the principles described for the Proposed Action in the Draft EIS/EIR.
3. The extended project life would also lengthen the duration of potential traffic and noise impacts to wildlife. The change to air quality impacts would also be related to the extended project duration. Air emissions are shown in Table 3.4 (Maximum Pit Backfilling, Air Pollutant Emissions Inventory). These emissions would be less than the Proposed Action and would not exceed California or national ambient air quality standards.



**TABLE 3.4**  
**MAXIMUM PIT BACKFILLING**  
**AIR POLLUTANT EMISSIONS INVENTORY**

SOURCE	EMISSION RATES											
	POUNDS PER DAY (PEAK)						TOTAL TONS PER YEAR					
	ROC	NO <sub>x</sub>	SO <sub>2</sub>	CO	PM <sub>10</sub>		ROC	NO <sub>x</sub>	SO <sub>2</sub>	CO	PM <sub>10</sub>	
					Combustive	Fugitive Dust					Combustive	Fugitive Dust
Mobile Equipment	69.3	2,117.4	184.9	409.0	65.1	--	10.4	317.6	27.7	61.4	9.8	--
Material Removal	--	--	--	--	--	137.3	--	--	--	--	--	20.6
Haul Road Travel	--	--	--	--	--	49.8	--	--	--	--	--	3.9
Dumping	--	--	--	--	--	137.3	--	--	--	--	--	20.6
Wind Erosion	--	--	--	--	--	174.0	--	--	--	--	--	31.8
TOTAL EMISSIONS	69.3	2,117.4	184.9	409.0	65.1	498.4	10.4	317.6	27.7	61.4	9.8	76.9

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SOURCE: Science Applications International Corporation

4. The change in visual impact, as compared to the Proposed Action, would be related to the extended period of lighting and activities that would be visible, and the topographic change of the overburden pile and pits. A visual impact analysis paralleling that completed in the Draft EIS/EIR has been completed for this alternative mitigation measure. Visual renderings have been prepared to show the Castle Mountain Project with backfilling from locations in Lanfair Valley as shown in Figure 3.12 (Visual Analysis Viewpoints) and are shown in Figures 3.13 (Viewpoint No. 1), 3.14 (Viewpoint No. 2), and 3.15 (Viewpoint No. 3). Views from the north, as shown in Figure 3.13 would not change with backfilling, since the overburden pile cannot be seen from that direction. Views from the west would change, but as shown in Figure 3.14, the visual impression would not be substantially affected by backfilling. The greatest change with backfilling would be views from the south, as shown in Figure 3.15. As shown in these renderings, while backfilling would eliminate the overburden pile, this degree of change is not readily apparent from the north and west.
5. A Visual Resource Management (VRM) contrast rating analysis based on these renderings is shown in Table 3.5 (Visual Resource Management Project Contrast Rating with Maximum Pit Backfilling). Comparing the results of this analysis to the results of the VRM analysis for the proposed project without backfilling (see Draft EIS/EIR page 5.8-12) indicates that the backfilling activity would not change the VRM results. The degree of visual resource improvement from maximum pit backfilling would therefore not be significant. The backfilled mine pits could only be seen by visitors at the pit perimeter. The primary visual change would be that the mine pit area would be a relatively flat surface. Benched walls would still be visible at higher elevations.

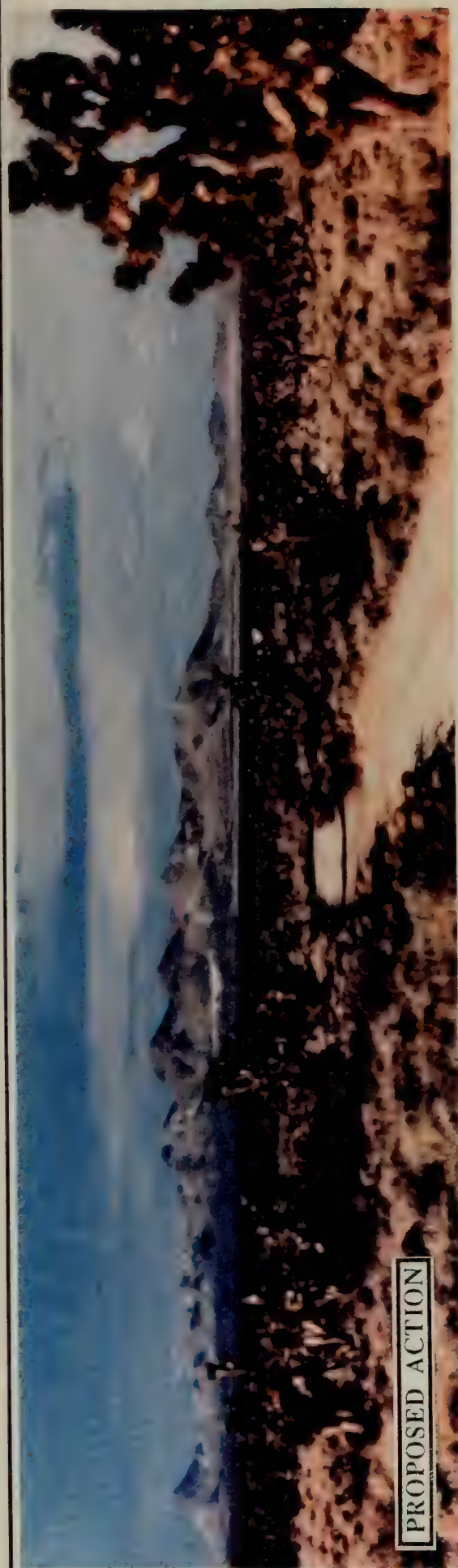
#### 3.3.2.1.5 Discussion

1. Overall, maximum pit backfilling would result in impacts that would be similar or greater than those for the Proposed Action, because of the increased duration of the project. While the reconstruction of topography similar to pre-disturbance contours for portions of the mine pits would not significantly enhance the site's visual character, an additional 104 acres of the site could be revegetated for wildlife habitat. However, it should be noted that the mine pits themselves would have habitat value for some species. Since backfilling could not begin until project completion, it would delay revegetation activities in the overburden area for about 10 years. The reason for this is that without backfilling, reclamation and revegetation on the







**PROPOSED ACTION****WITH MINE PIT BACKFILLING****Explanation:**

The Proposed Action would include an overburden pile, visible as shown at upper right, from locations westerly of the site. If mine pit backfilling were employed, the overburden pile would not be visible, as shown at lower right. Other mine features would be identical to the Proposed Action.

**FIGURE 3.13**

**VIEWPOINT NO. 1**  
**CHANGE IN VISUAL IMPACT**  
**WITH MINE PIT BACKFILLING**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.







**Explanation:**

The overburden pile associated with the Proposed Action is located amongst hills at the south end of the Castle Mountains. It would not be visible from locations north westerly of the site. This view would therefore not change with mine pit backfilling.

FIGURE 3.14

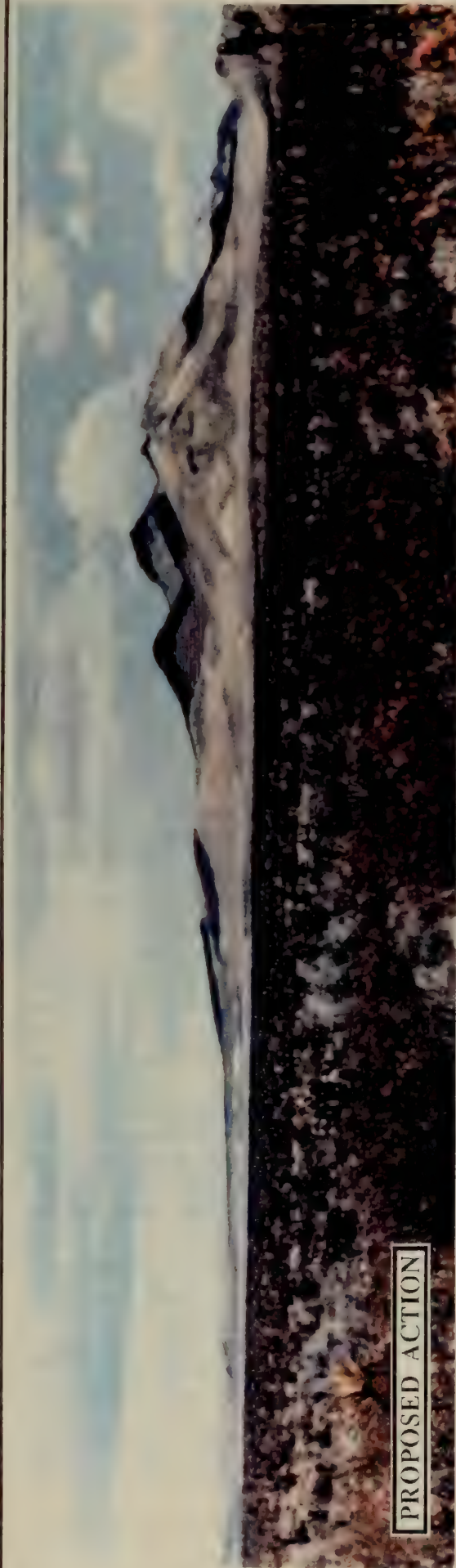
**VIEWPOINT NO. 2  
CHANGE IN VISUAL IMPACT  
WITH MINE PIT BACKFILLING**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.







PROPOSED ACTION



WITH MINE PIT BACKFILLING

**Explanation:**

Overburden from the mine pits associated with the Proposed Action would form an elevated mesa when viewed from the south, as shown at upper right. If backfilling were to be employed, the mesa would be removed when the overburden was placed back in the pit, as shown at lower right. The heap leach pad mesas would still remain, as shown at lower left.

FIGURE 3.15

**VIEWPOINT NO. 3**  
**CHANGE IN VISUAL IMPACT**  
**WITH MINE PIT BACKFILLING**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.





TABLE 3.5

**VISUAL RESOURCE MANAGEMENT  
PROJECT CONTRAST RATING WITH  
MAXIMUM PIT BACKFILLING**

Method: ELEMENT (Weight) x DEGREE OF CONTRAST (rating) = SCORE					
FEATURE			AFTER RECLAMATION <sup>(1)</sup>		
	Element		Contrast <sup>(2)</sup>	Rating	Score <sup>(3)</sup>
LAND SURFACE	Form	(4)	Weak	(1)	4
	Line	(3)	Weak	(1)	3
	Color	(2)	Weak	(1)	2
	Texture	(1)	Weak	(1)	1
				TOTAL	10
VEGETATION	Form	(4)	Weak	(0)	0
	Line	(3)	Weak	(1)	3
	Color	(2)	Moderate	(2)	4
	Texture	(1)	Weak	(1)	1
				TOTAL	8
STRUCTURE	Form	(4)	None	(0)	0
	Line	(3)	None	(0)	0
	Color	(2)	None	(0)	0
	Texture	(1)	None	(0)	0
				TOTAL	0

88-148 (8/23/90)

Explanation:

This table evaluates the potential visual contrasts of the Castle Mountain Project according to BLM VRM procedures. The VRM process first segregates the landscape into its major *features* (land surface, vegetation, structures) and each feature, in turn, into its basic *elements* (form, line, color, texture). Each element is assigned a weighted value, based on its significance in the landscape. The contrast rating reveals the existing features and their respective elements that would be subject to the greatest visual impact. A total contrast score of each feature may then be used to define the overall contrast for each feature.

After reclamation efforts were completed on the Castle Mountain Project, land surface, vegetation, and structure scores would be reduced to 10, 8, and 0, respectively. This level of contrast would be defined as weak. This contrast rating is identical to that evaluated in the Draft EIS/EIR for the Proposed Action without mine pit backfilling. This is because the weak contrast rating of land surface features would not be sufficiently reduced with backfilling to warrant a "0" (none) contrast rating.

- (1) Contrast rating evaluation based upon completion of reclamation activities as depicted in visual simulations (see Figures 3.13, 3.14, and 3.15) including contouring of heap piles, rock staining of upper pit walls, and revegetation on heap piles, roads, and mine pit backfilling with material from the overburden pile.
- (2) Existing contrast and reclamation of Big Chief Hill clay pit is not evaluated.
- (3) VRM Contrast Rating Scores:
  - 0 to 10 points - Contrast can be seen but does not attract attention (i.e., weak).
  - 11 to 20 points - Attracts attention and begins to dominate (i.e., moderate).
  - 21 to 30 points - Demands attention and will not be overlooked by the average observer (i.e., strong).

Source: BLM, 1981c *Visual Resource Management Program*.





surface of the overburden pile would begin as soon as adequate working spaces had been established on the overburden site (in about Year 3 of the project). With maximum pit backfilling, reclamation and revegetation of the reconstructed surface in the overburden area could not begin until backfilling had removed all material in that area (in about Year 13 of the project). The degree to which the maximum pit backfilling would meet the objectives for enhancement of visual resources and wildlife habitat is therefore considered limited.

2. The Applicant has noted that if maximum pit backfilling were required as a mitigation measure, it would result in: (1) the loss of mineral resources that could be mined in the future, and (2) backfilling costs that would burden the project to the extent that it would no longer be economically feasible (at \$0.80 per ton, the Applicant has estimated that backfilling would cost in excess of \$41 million). Based upon the known quantities of lower grade mineralization adjacent to the current mine pit configurations (see Section 3.3.1.2.1), backfilling would result in the potential loss of about 10.5 million tons of possible resources around the Lesley Ann pit, containing an estimated 330,000 ounces of gold, and about 4.8 million tons of possible resources for the Oro Belle pit, containing about 240,000 ounces of gold. As indicated in Section 3.3.1.2.1, a minimum gold price of about \$1,100 per ounce would be required to make mining of these resources profitable after re-excavating backfilled materials, compared to a price of about \$600 per ounce if the pits remained as originally excavated.

### 3.3.2.2 Scree Slope Backfilling

1. This method was developed in an effort to determine if a method of accommodating some project mine pit backfilling could be completed without covering the potential future ore resources. The primary objective would be to conceal mining excavations (principally the upper portions of the pit walls) that would otherwise be visible from Lanfair Valley.

#### 3.3.2.2.1 Site Plan and Major Project Components

1. The concept of creating slopes of loose rock (scree slopes) to cover the pit walls following the completion of operations would involve loading and hauling rock from the overburden pile to the top of the pit walls and dumping the material down the edge of the pit. The process would be completed when the slope angle was about two horizontal to one vertical (2H:1V), which would be stable for public safety purposes. This would require construction of haul roads to

points at the top of the pit walls. Site plans for the Lesley Ann and Oro Belle pits to implement this method are shown in Figures 3.16 (Scree Slope Backfilling Alternative Mitigation), and 3.17 (Scree Slope Backfilling Cross Section).

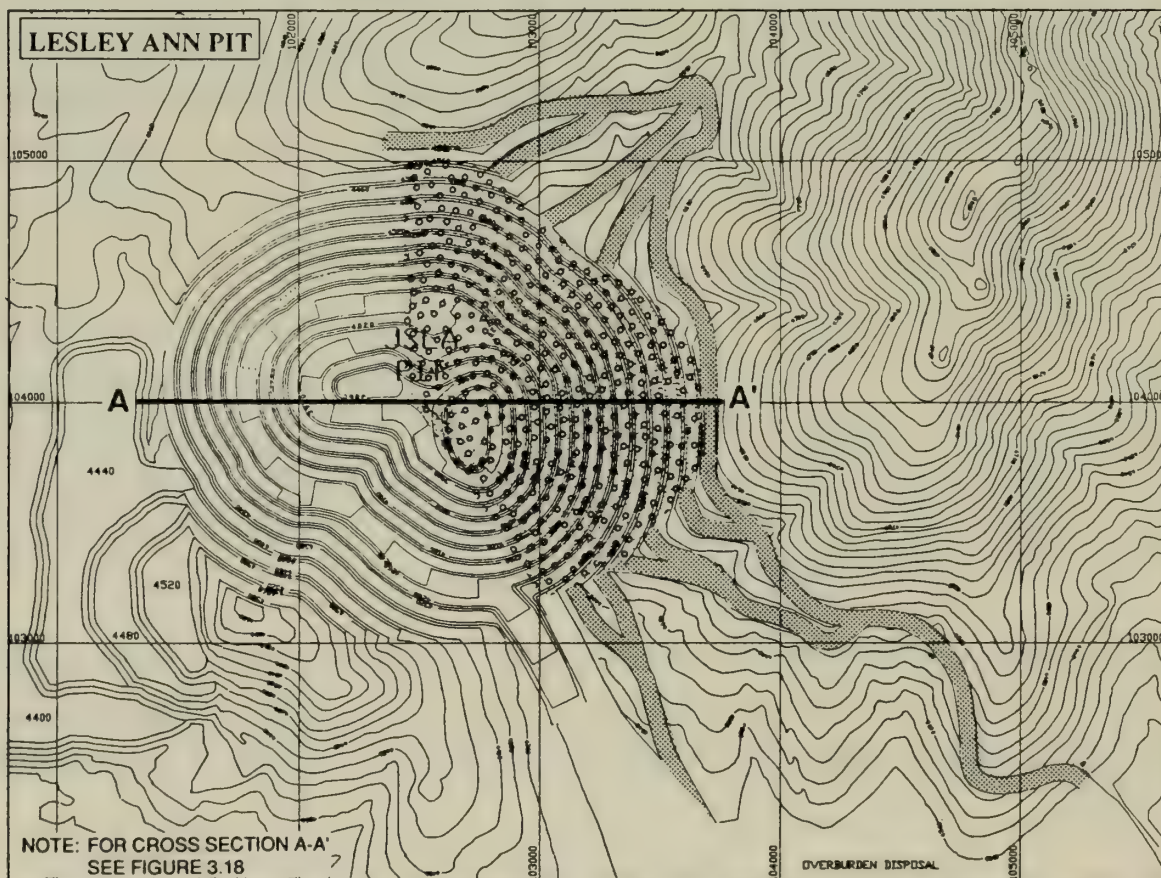
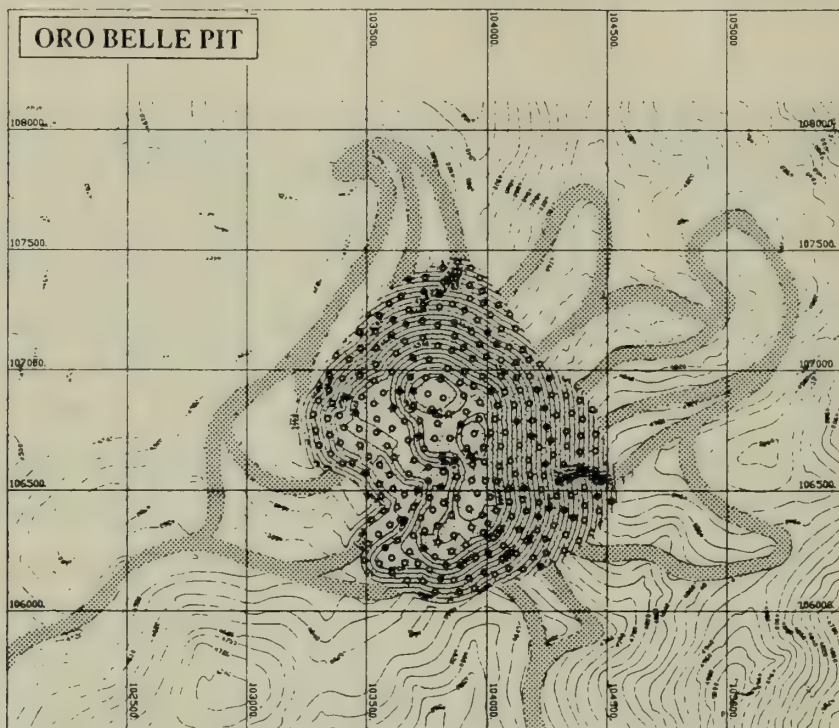
2. A cross section showing the outline of the Lesley Ann pit and a scree slope on the east wall of that pit, facing Lanfair Valley, is shown in Figure 3.17. Based upon a slope angle of 2H:1V, the total volume of material backfilled to the Lesley Ann pit would be about 7.8 million cubic yards. The backfilling project would involve surface activities disturbing an additional 29 acres to construct haul roads to gain access to areas along the eastern perimeter of the pit to allow placement of overburden materials to develop the scree slope.
3. The Oro Belle deposit is located within a steep, narrow valley. Backfilling the Oro Belle pit to a 2H:1V scree slope would therefore nearly replicate existing topography. About 7.7 million cubic yards of overburden would be required in developing the scree slopes for this pit. Owing to the ruggedness of the terrain in this area, construction of roads (see Figure 3.16) for haul trucks to gain access to the pit perimeter to dump material down the scree slopes would require disturbing more than 40 acres of land.

#### 3.3.2.2.2 Utilities, Ancillary Structures, Equipment and Supplies

1. Creating scree slopes covering the east wall of the Lesley Ann pit and the walls of the Oro Belle pit would accommodate a total of about 15.5 million cubic yards of material. This is equivalent to approximately 45 percent of the volume that would be used for maximum pit backfilling described in Section 3.3.2.1. However, since haul roads would need to be constructed, and overburden transported to the top of the pit walls, equipment and fuel use would be somewhat disproportionately higher.
2. The equipment necessary would be similar to that for the maximum pit backfilling, with the addition of equipment for road construction. However, the total time for scree slope backfilling would be about 1.5 years. An estimated 325,000 man-hours of labor would be required.







**LEGEND**



HAUL ROAD CONSTRUCTION REQUIRED



BACKFILLED SCREE SLOPE

NOTE: SCREE SLOPE BACKFILLING FOR THE LESLEY ANN PIT WOULD BE COMPLETED ON THE EAST WALL SINCE IT IS THE PORTION VISIBLE FROM LANFAIR VALLEY.

FIGURE 3.16

**SCREE SLOPE BACKFILLING  
ALTERNATIVE MITIGATION**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.

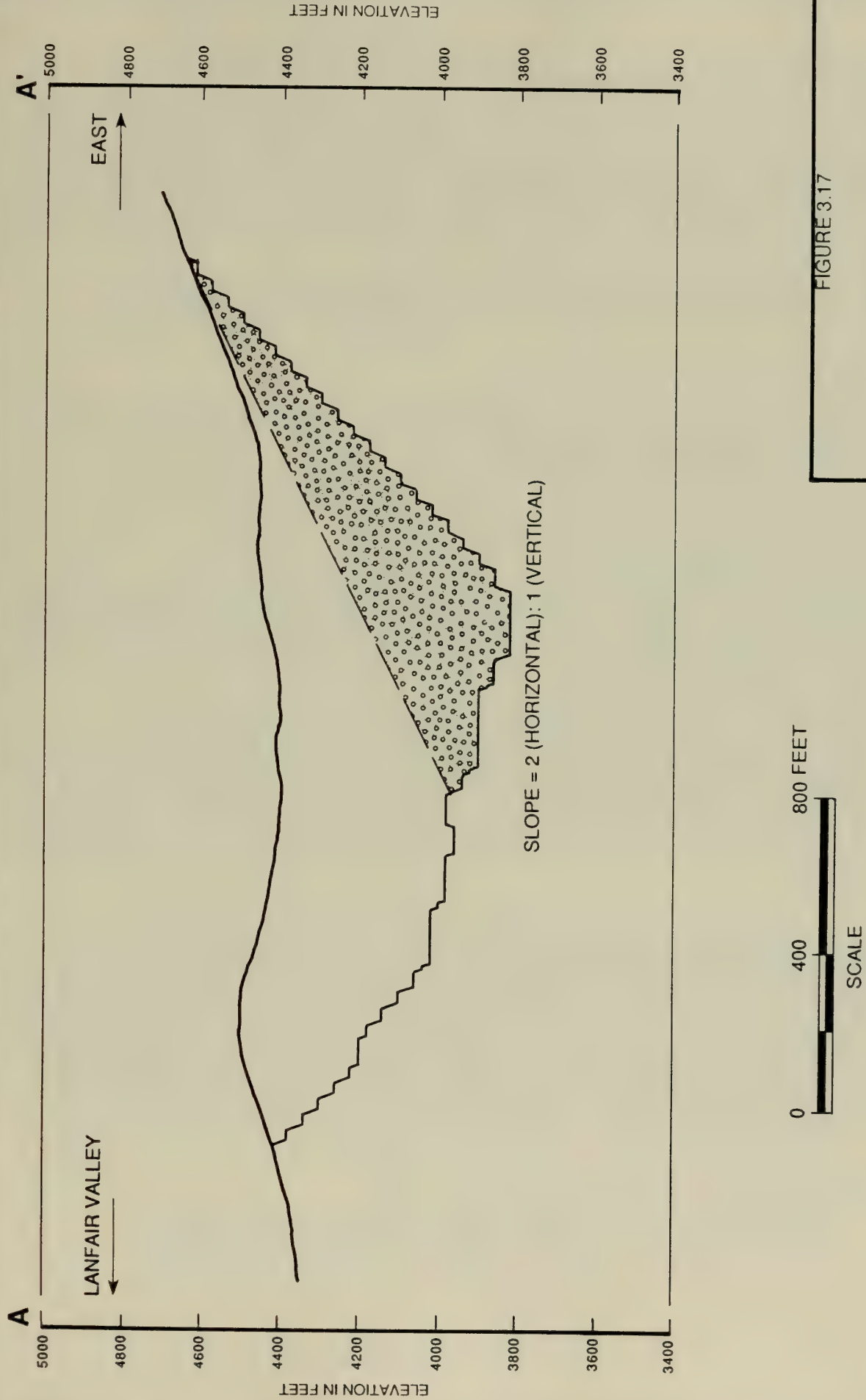


FIGURE 3.17

**SCREE SLOPE  
BACKFILLING CROSS SECTION**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

NOTE: SCREE SLOPE BACKFILLING FOR THE LESLEY ANN PIT WOULD BE COMPLETED ON THE EAST WALL SINCE IT IS THE PORTION VISIBLE FROM LANFAIR VALLEY



3. The fuel and oil used would include:

<u>Type</u>	<u>Use</u>	<u>Estimated Total Consumption</u>
Diesel fuel	Mine equipment, vehicles	2,805,000 gallons
Gasoline	Vehicles	50,000 gallons
Oils and lubricants	Mine equipment, vehicles	41,000 gallons

4. Water use is estimated at 118 million gallons (362 acre-feet).

#### 3.3.2.2.3 Project Traffic and Site Access

1. Project traffic associated with scree slope backfilling is estimated at about 16 ADT. The Mitigated Access Route would be used.

#### 3.3.2.2.4 Environmental Impact

- Anticipated unavoidable adverse environmental effects of scree slope backfilling are shown in Table 3.3. The table shows that there would be some increase in impact on nearly each of the resource categories affected.
- Water consumption would be about five percent greater than for the Proposed Action, due to increased water needs to control dust generated by rocks rolling down the extensive scree slopes as the pits are backfilled. However, no impact to Piute Spring would be expected, based on the same principles as concluded for the Proposed Action in the Draft EIS/EIR analysis.
- The additional land disturbance required for the haul roads would be nearly 70 acres. The disturbances would be relatively large, because of the need to construct haul truck roads 60 to 70 feet wide, in steep terrain. Due to the steep topography, these haul roads would be difficult to adequately reclaim. Increases in vegetation and wildlife habitat disturbance would be associated with the additional land disturbance. Air quality impacts would be related to an extended period of operation.
- Visual resources would change for two primary effects:
  - The scree slopes would be surfaces with large areal content, composed of loose rock, difficult to revegetate effectively. Because revegetation would

be difficult, and because rock spraying would not be as effective on loose material, this method would result in an increased color contrast as compared to the Proposed Action.

- The haul roads and maneuvering spaces necessary to complete scree slope backfilling would result in large cuts and fills on upper slopes of the Castle Mountains. As reclamation on these steep slopes would be difficult, the road cuts could remain visible from many locations in Lanfair Valley.
- A visual rendering showing the reclaimed project with the light colored unvegetated rock on the scree slopes is shown in Figure 3.18 (Scree Slope Backfilling Visual Rendering).

### 3.3.2.2.5 Discussion

1. The environmental advantage that scree slope backfilling would offer over the Proposed Action is questionable. The primary problem is that, at this site, the topography surrounding the pits is too steep to employ scree slope backfilling without additional ground disturbance. While this mitigation measure would result in a reduction of about 43 percent of the overburden pile volume, it is expected that the potential visual benefits of that reduction would be more than offset by the additional adverse visual effects associated with surface disturbances to accommodate haul roads on the hillsides above the pit perimeters. Further, the scree slope would probably create a higher degree of color contrast than the Proposed Action since it would be composed of light-colored rock, while the mine pit color contrast would be effectively mitigated with rock staining. The degree to which mitigation using scree slope backfilling would meet objectives for enhancement of visual resources and wildlife habitat is therefore considered limited.
2. Scree slope backfilling would also bury the otherwise exposed mineralization. As shown in Figure 3.17, constructing a 2H:1V scree slope on its east wall would fill a significant portion of the Lesley Ann pit with overburden. Scree slopes at this angle would fill 95 percent of the Oro Belle pit. Therefore, the initial objective of scree slope backfilling (to complete some backfilling without covering over possible ore reserves) would not be achieved. As for maximum pit backfilling described in Section 3.3.2.1, overburden would need to be hauled out of the pits before future mining of lower grade mineralization could be initiated.



### 3.3.2.3 Sequential Pit Backfilling

1. This method has been suggested as a means to accommodate backfilling of project mine pits during the operational life of the Proposed Action. Overburden from the second pit could be used to fill the first. The purpose of this mitigation measure would be to backfill as much material as possible in conjunction with project activities, to reduce the size of the overburden pile and reconstruct some wildlife habitat in the area of the mine pits. This scheme for partial backfilling would be completed concurrently with mining activities.

#### 3.3.2.3.1 Site Plan and Major Project Components

1. According to the Applicant, mining the Oro Belle pit first would not be feasible since the Oro Belle pit, which is one quarter the size of the Lesley Ann pit, is economically incapable of sustaining project operation because of the concentration of gold and small size of the ore body. Therefore, sequential backfilling would have to first involve mining the Lesley Ann pit which would be completely mined-out before mining the Oro Belle pit. The overburden from the Oro Belle pit could then be deposited directly in the Lesley Ann pit. It is estimated that the Oro Belle pit would contain about 9.5 million tons of overburden, which would result in about 6.2 million cubic yards being deposited in the Lesley Ann pit.
2. If this method of backfilling were employed, the Lesley Ann pit would be filled to an elevation of 4,100 feet. This would be 220 feet below the lowest point in the rim of the Lesley Ann pit. The final topography would include a surface configuration for the Lesley Ann pit as shown in Figure 3.19 (Sequential Pit Backfilling). This would refill approximately 30 percent of the Lesley Ann pit. The amount of overburden used would reduce the height of the overburden pile from 200 feet to 187 feet. A level area covering 16 acres in the Lesley Ann pit would be created. The Oro Belle pit would not be backfilled.

#### 3.3.2.3.2 Utilities, Ancillary Structures, Equipment and Supplies

1. In order for sequential pit backfilling to be accomplished within the life of the Proposed Action, several pieces of additional equipment (principally haul trucks and loaders) would be needed to stockpile and rehandle additional ore from the Lesley Ann pit and move the overburden from the Oro Belle pit a greater distance. In order to maintain production during this transition period, ore would have to be premined from the Lesley Ann pit, then stockpiled for retrieval during the period the Oro Belle pit is being prepared for production.



Explanation: This photograph shows completion of the mining operation, with reclaimed heap leach pads and overburden piles. The South Clay pit is also shown as a reclaimed feature. The expected visual contrast with scree slope backfilling is depicted by the light colored material covering the upper mine pit walls.

FIGURE 3.18

**SCREE SLOPE BACKFILLING  
VISUAL RENDERING**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.





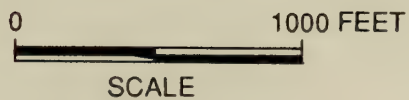
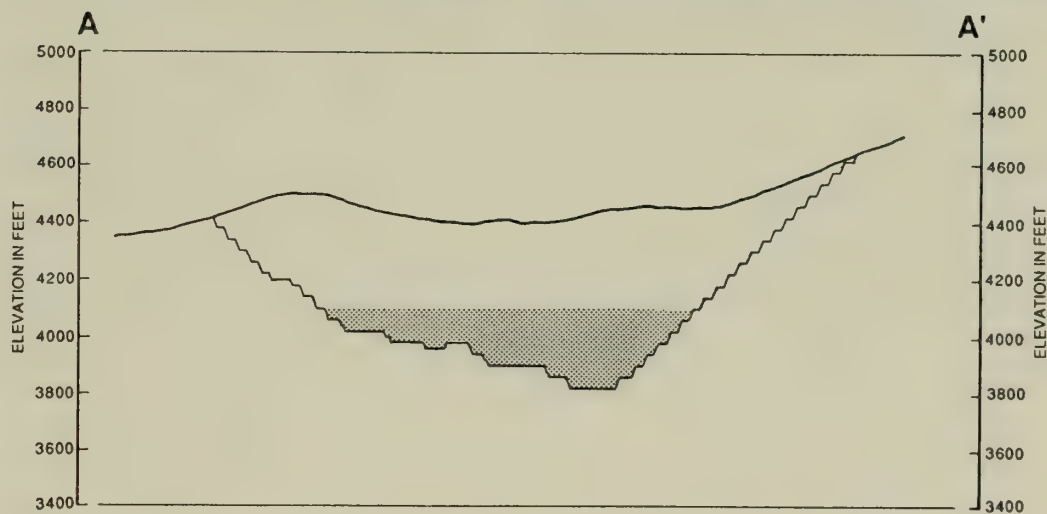
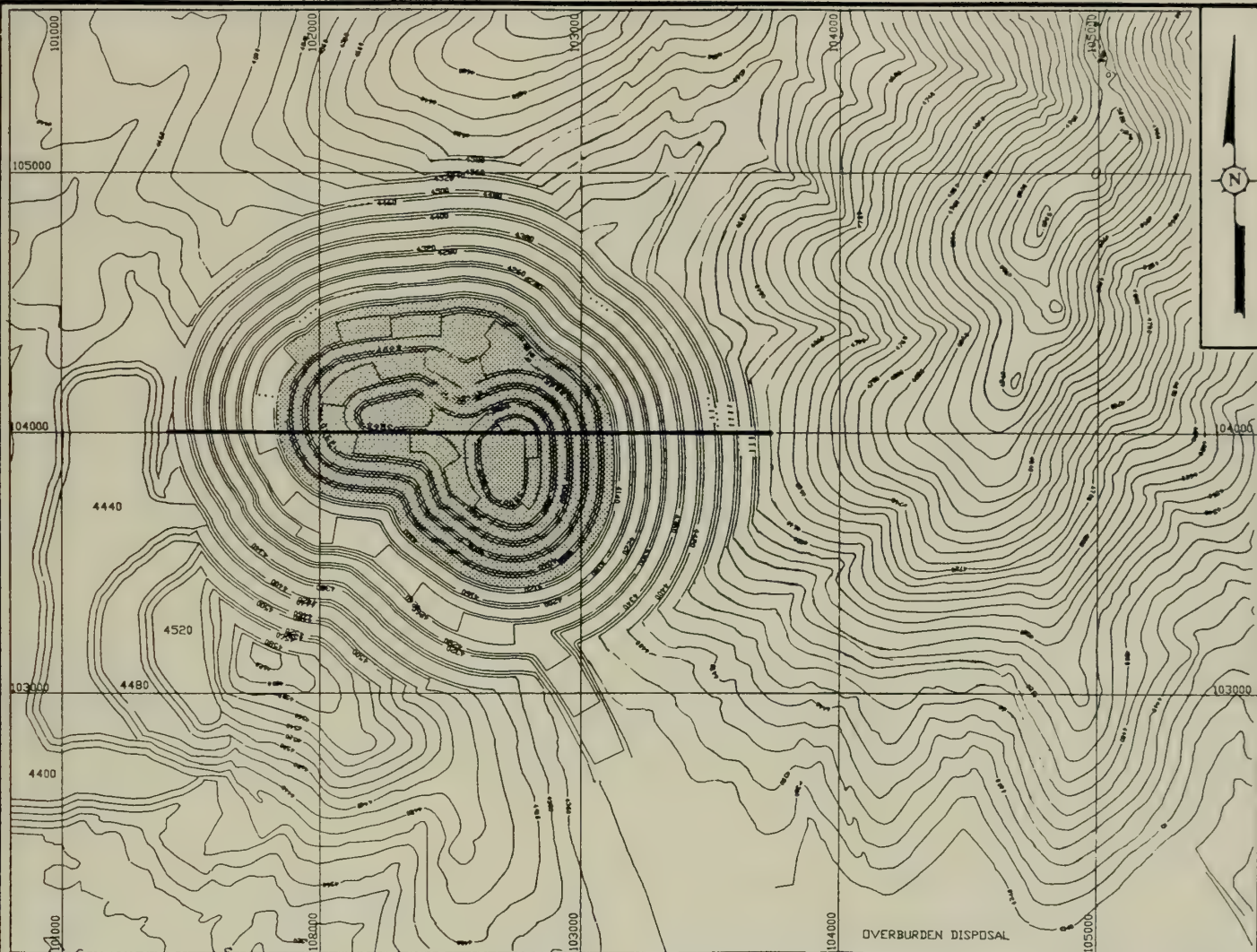


FIGURE 3.19

**SEQUENTIAL PIT BACKFILLING  
ALTERNATIVE MITIGATION**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.



#### 3.3.2.3.3 Project Traffic and Site Access

1. No increase in traffic or access would be required for sequential pit backfilling, as the additional operation personnel and supplies needed could be accommodated within the traffic level specified in the Draft EIS/EIR (108 ADT).

#### 3.3.2.3.4 Environmental Impact

1. Anticipated unavoidable adverse effects of sequential pit backfilling are shown in Table 3.3. The table shows that the effects of this mitigation measure would be similar to the Proposed Action. No significant increase or decrease in environmental impacts are expected.

#### 3.3.2.3.5 Discussion

1. The potential environmental benefits from sequential pit backfilling include an additional 16-acre area to be revegetated, and a 13-foot reduction in the height to the overburden pile. Neither of these results would significantly change the environmental effects of the Proposed Action.
2. The Applicant has indicated that the major deterrents to sequential pit backfilling of the project mine pits are: (1) the potential loss of ore reserves covered with overburden, (2) disposal of overburden from the Oro Belle pit, and (3) technical constraints that would burden the Proposed Action's operational flexibility that is designed to optimize ore processing.
3. Continuous processing of ore would be necessary to achieve a profitable operation. Therefore, there must be overlap in mining the ore deposits so that when the first deposit is exhausted, adequate ore has been exposed in the second deposit. The second deposit must be developed for production far enough in advance so that ore from the initial deposit can sustain the operation until the second deposit is capable of supplying all the ore needed for the process plant. Failure to complete this development work on an appropriate schedule would result in a suspension or reduced scale of operations until the second pit expands to the point that it can provide sustained production. Sequential backfilling of the project mine pits can be accommodated, but only at the expense of more manpower, equipment and rehandling of materials (ore, overburden or some combination of each) than would otherwise be the case.

**CHAPTER 4.0**  
**RESPONSE TO COMMENTS**







## 4.0 RESPONSE TO COMMENTS

1. Federal regulations dictate that an agency preparing a final EIS shall assess and consider comments both individually and collectively, and respond by one or more of the following means:

- Modify alternatives including the Proposed Action.
- Develop and evaluate alternatives, not previously given serious consideration by the agency.
- Supplement, improve, or modify the analyses.
- Make factual corrections.
- Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response (40 CFR 1503.4).

The CEQA guidelines similarly require that the final EIR provide responses to significant environmental points raised in the review and consultation process (14 CCR §15132).

2. As a result of the wide distribution of the Draft EIS/EIR and Supplement and the degree of public interest in the project, a substantial number of comments were received. While the comments received did not result in modifications or corrections to the analyses or conclusions of the environmental analyses, clarification of some conclusions and additional specificity for some mitigation measures was suggested. Changes to the information previously presented that occurred as a result of public input were described in Chapter 3.0. Those changes were derived from the final selection of mitigation measures which modified the final project design plans. In addition, further consideration was given to alternative mitigation measures to backfill project mine pits. This chapter provides the additional clarification requested for aspects of the major issues addressed in the Draft EIS/EIR and Supplement. In addition, comments of a general nature which do not require more detailed response are addressed.

### 4.1 COLLECTIVE RESPONSES

1. This section provides collective responses on the key issues of public interest. As was shown in Figure 2.1, the majority of public comment centered on environmental issues such as wildlife, ground water, land use, and reclamation, which were previously addressed in the Draft EIS/EIR and Supplement. In addition, opinions on project approval/denial were expressed and questions were asked about the administrative process.



2. This section addresses the most commonly asked types of questions and questions/comments that were general in nature. Representative quotes from comment letters are provided and discussion and/or clarification on the environmental analyses and administrative process is given.

#### 4.1.1 SIGNIFICANCE OF IMPACTS FROM THE CASTLE MOUNTAIN PROJECT

1. CEQA Guidelines define a "significant effect on the environment," in part, as:

- "A substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance..." (14 CCR §15382).

Criteria for determining whether or not a project will normally have a significant effect on the environment are found in Appendix G of the CEQA Guidelines.

2. CEQA (Cal. Pub. Res. Code §21083) requires that a finding be made for a "significant effect on the environment," if any of the following conditions exist:
  - The proposed project has the potential to degrade the quality of the environment, curtail the range of the environment, or to achieve short-term goals, to the disadvantage of long-term, environmental goals.
  - The possible effects of a project are individually limited but cumulatively considerable. As used in this subdivision, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed, in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
  - The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.
3. Each of the potential effects of the Castle Mountain Project to the environment was identified and evaluated in the Draft EIS/EIR. Mitigation measures were proposed for each effect to reduce, avoid, or reclaim the potential impacts. Based upon criteria that were established to assess "significance" that were developed from applicable standards and regulations (including Appendix G of the CEQA Guidelines) it was determined in the Draft EIS/EIR (Chapter 5.0, Potential Environmental Effects) that the project would not result in a substantial adverse change in any of the physical environmental conditions. Further, the collective effects of the project were evaluated in the Draft EIS/EIR (Chapter 8.0, Cumulative Impacts). It was found that the cumulative effects of the Proposed Action itself, in connection with other past, present, or reasonably foreseeable future projects, would not be expected to significantly

affect an environmental resource or the continuation of an existing land use. Therefore, based upon the available evidence and the concept of significance as envisioned by NEPA or CEQA, the project as mitigated would not have a significant effect on the environment.

4. Comments received indicated that some reviewers disagree with the Draft EIS/EIR conclusions. Where specific points of disagreement were expressed by commenters, detailed responses have been prepared in this document. However, it is recognized that reviewers of the same data may arrive at different conclusions, and therefore the opinions of each commenter are hereby acknowledged.
5. CEQA (Cal. Pub. Res. Code §21082.2(b)) explains that, "Statements in an environmental impact report and comments with respect to an environmental impact report shall not be determinative of whether the project may have a significant effect on the environment." According to CEQA, it is the responsibility of the decision makers of the Lead Agency to "determine whether a project may have a significant effect on the environment based on substantial evidence in the record" (Cal. Pub. Res. Code §21082.2(a)).

#### 4.1.2 PROJECT APPROVAL/DENIAL CONSIDERATIONS

##### 4.1.2.1 Unnecessary or Undue Degradation

1. The Draft EIS/EIR explained that, based upon Federal law, BLM is required to approve mining operations as long as such activities will not cause unnecessary or undue degradation of the public lands (Section 2.2.1, Bureau of Land Management). Some commenters interpreted the Proposed Action's potential impacts to the environment as "unnecessary or undue degradation" as reflected in comments such as:
  - "It is clear that unnecessary and undue degradation of the environment will occur . . ."
2. The Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701 *et seq.*) requires BLM to "by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the (public) lands" (43 U.S.C. Section 1732(b)). FLPMA's requirement to manage public lands to prevent unnecessary or undue degradation amended the General Mining Law of 1872 (30 U.S.C. §22). FLPMA (43 U.S.C. §1701(a)(12)) declares a national policy that public lands are to be managed in a manner that: (1) recognizes the nations need for domestic sources of minerals and (2) protects environmental values.



3. BLM's regulations, established to prevent the unnecessary or undue degradation of Federal lands which could result from mining operations, are found at 43 CFR Subpart 3809. The regulations define "unnecessary or undue degradation" as:

- " . . . surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in usual, customary, and proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those resources and uses outside the area of operations. Failure to initiate and complete reasonable mitigation measures, including reclamation of disturbed areas or creation of a nuisance may constitute unnecessary or undue degradation. Failure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation."

In addition, the regulations require that where specific statutory authority requires attainment of a stated level of protection or reclamation, as for the CDCA, that level of protection shall be met (see pages 101-104 of the California Desert Conservation Area Plan, 1980) (43 U.S.C. §1781).

4. In compliance with these requirements, the Castle Mountain Project Draft EIS/EIR describes in detail the mining technology that would be used at this operation, which is comparable to similar state-of-the-art mining operations in the western United States. The operation would employ proven methods to minimize impacts and conserve resources. Environmental concerns have been considered and addressed throughout each step of the Proposed Action, and are explicitly evaluated in the Draft EIS/EIR (Chapter 5.0, Potential Environmental Impacts) and the Supplement (Chapter 3.0, Regulatory and Project Changes).
5. An environmental specialist will monitor project activities and will report the results to the BLM, County, and other responsible agencies. This will ensure that each phase of the operation remains within the parameters set forth in the agency's decisions. The monitoring program was described in the Supplement (Chapter 6.0, Draft Mitigation Compliance Program).
6. The proposed project would be consistent with land use plans, including the CDCA Plan and EMNSA Management Plan, and with the County Consolidated General Plan (1979), as discussed in the Draft EIS/EIR (Section 5.10, Land Use).

7. The final determination as to whether or not the Proposed Action would constitute "unnecessary or undue degradation" is the prerogative of the BLM and County.

#### 4.1.2.2 Future Mining Proposals

1. A concern for future mining activities in the East Mojave Desert was stated as:
  - "What precedent will this project set for other heap leach operations in the east Mojave?"
2. The Draft EIS/EIR and Supplement included an analysis of potential cumulative and future impacts. The Draft EIS/EIR (Chapter 8.0, Cumulative Impacts) described other known or potential future projects in the region and evaluated their potential for combined effects with the Castle Mountain Project. The Draft EIS/EIR Supplement (Chapter 5.0, Cumulative Impacts) expanded this evaluation to analyze the potential for future expansion of the project or an extended project operating period.
3. Both the Draft EIS/EIR and Supplement (Chapters 8.0 and 5.0, respectively) discussed future mining, and the complexities involved in forecasting future mines based on exploration activities. In general, the effects of mining are site-specific and future proposals must be individually evaluated with respect to their location, environmental resources of the site and surrounding area, and other ongoing activities. Based on these analyses, there are no reasonably foreseeable future mining activities that could, in combination with the Castle Mountain Project, result in a significant cumulative impact to any environmental resource.
4. Both the EMNSA Management Plan (1988) and the County Consolidated General Plan have provisions for land uses involving mining activities, in compliance with FLPMA and the County Development Code. Approval of such activities is contingent upon consistency with applicable Federal, State, and local laws and regulations, and compliance with NEPA and CEQA environmental regulations. Mining proposals are individually evaluated by the agencies based on their own merits and weaknesses.
5. Heap leach mining is but one method of mineral resource extraction. There are currently 12 active cyanide leach mines on public lands in California. Ten of these are located in the CDCA, one of which is located in the EMNSA. This and other mines in the EMNSA are shown in Figure 4.1 (Mines in the East Mojave National Scenic Area). Each of these mines



has received approval following a detailed review by regulatory agencies. Specific conditions are required for these operations, to mitigate their respective impacts to environmental resources.

6. Since existing regulations permit heap leach operations as a form of mineral processing, and because these activities already occur in the region, approval of the Castle Mountain Project will not serve as a precedent or an authoritative rule for similar cases proposed in the future.

#### 4.1.3 ADMINISTRATIVE CONSIDERATIONS

##### 4.1.3.1 BLM and County Responsibilities

1. Some commenters asked questions similar to:
  - "How can such a proposal be entertained?"

Such questions were generally associated with opinions on project approval. In that regard, the following paragraphs are intended to provide an understanding of the land use planning and approval process, and responsibilities of the BLM and County in reviewing applications.

2. As public agencies with authority over land use within their jurisdictions, the BLM and County are responsible for managing existing land uses (in accordance with Federal regulations and County codes), planning for future land use (i.e., the CDCA and EMNSA plans, State laws, and the County General Plan), and for exercising their discretionary authorities over development proposals for land use. These agencies have an obligation to review and consider any proposal for land development which is submitted in conformance with established procedures.
3. For the Castle Mountain Project, the Applicant submitted a Plan of Operations (Viceroy, 1988a) to the BLM for review in conformance with Federal regulations, and an Application for Mine Plan and Reclamation Plan Approval and Site Plan Review (Viceroy, 1988b) to the County for review in conformance with the County Development Code. An initial step by both agencies in the consideration of such applications is an environmental review. Another important consideration is the proposal's consistency with plans, policies, and regulations. The Draft EIS/EIR was designed to analyze the environmental consequences of the proposed project. A discussion of the project's consistency with applicable plans, policies, and regulations, as well as an evaluation of its compatibility with existing land uses, were included in the Draft EIS/EIR (Section 5.10, Land Use).

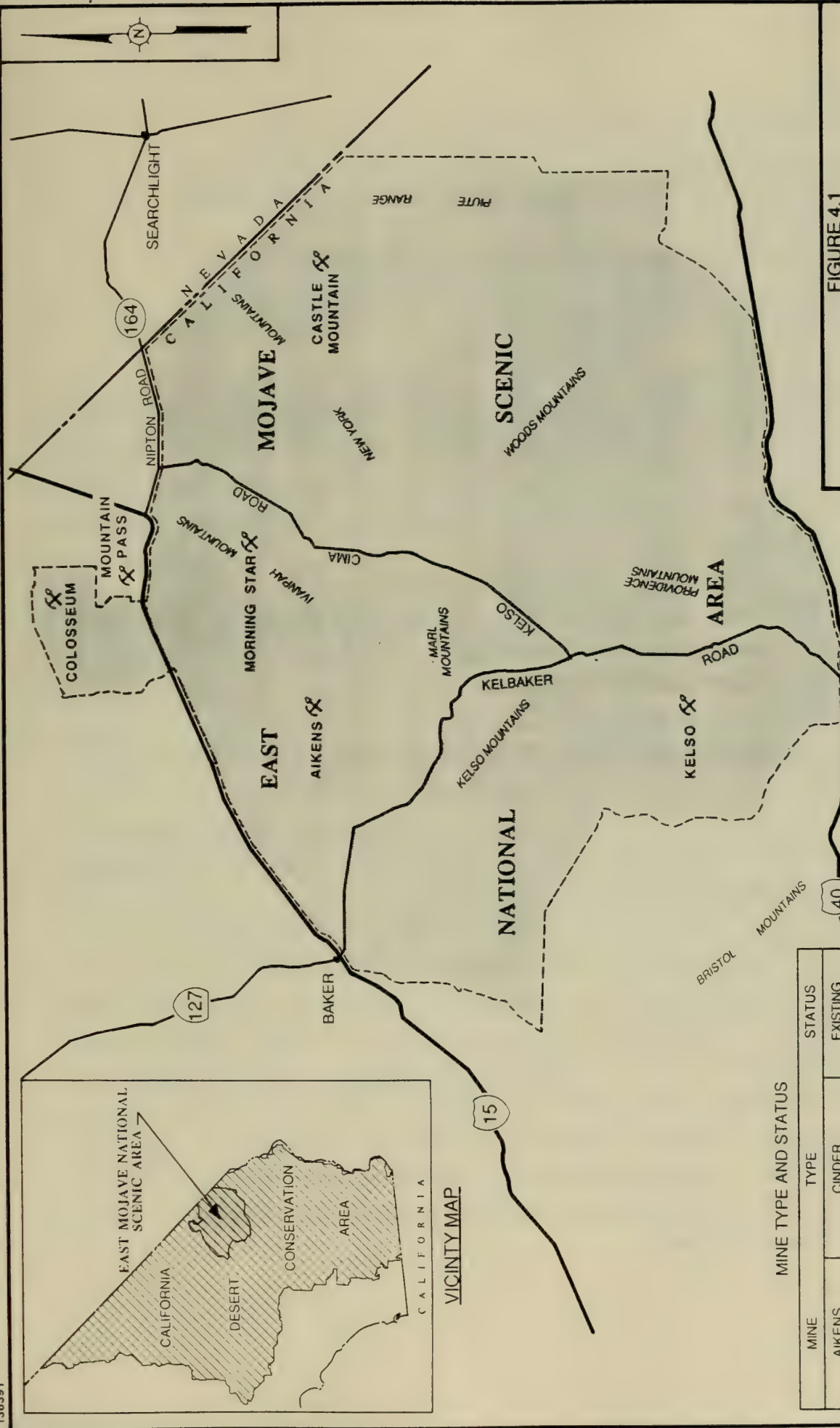


FIGURE 4.1

**MINES IN THE  
EAST MOJAVE  
NATIONAL SCENIC AREA**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.

MINE TYPE AND STATUS

MINE	TYPE	STATUS
AIKENS	CINDER	EXISTING
CASTLE MTN.	HEAP LEACH GOLD	PROPOSED
COLOSSEUM	VAT LEACH GOLD	ACTIVE
KELSO	MINERAL SANDS	PROPOSED
MORNING STAR	HEAP LEACH GOLD	ACTIVE
MOUNTAIN PASS	RARE EARTH	ACTIVE



#### 4.1.3.2 Bonding

1. Comments received on the issue of bonding included statements such as:
  - "Why hasn't an initial bond amount been determined and deposited, or an irrevocable letter of credit payable to the United States and San Bernardino County delivered?"
  - "...reclamation costs may far exceed original estimates. Unexpected factors can and do arise, and reclamation methods often require revision, usually at an additional cost. The reclamation bond must be designed to accommodate costs that become apparent only as reclamation actually occurs."
2. BLM's regulations (43 CFR Subpart 3809.1-9) permit bonding of mining operations at the discretion of the authorizing officer. BLM requires bonding for all cyanide heap leach operations on public land. The purpose of a bond for the Castle Mountain Project would be primarily to guarantee completion of project reclamation to the satisfaction of the BLM, County, and RWQCB.
3. The Draft EIS/EIR (Section 2.8.3, Bonding) explained that the bond amount would be determined by the BLM and County, based upon the final design plans for acreage to be disturbed and the projected costs of reclamation. Reclamation costs would be appraised at the projected prevailing cost rates at the time reclamation is to be completed. Preliminary estimates of reclamation costs included in the final Reclamation Plan will be considered in establishing bonding amounts. In establishing the bond amount, the BLM and County will take into consideration the fact that the costs for certain reclamation activities (e.g., decommissioning the leach pads, solution storage facilities, process plant, and overburden disposal areas) would be bonded by the RWQCB.
4. The specific costs for incremental site disturbance and reclamation would therefore be determined and assessed annually prior to surface disturbing activities, based upon the detailed engineering plans for each construction phase and element of the project. Preliminary costs for reclamation activities have been estimated in the reclamation plan (Viceroy, 1990) for the initial phase of surface disturbing activities. These costs, which are summarized in Table 4.1 (Estimated Stage 1 Reclamation Costs), will form the basis for initial project bonding. Since the project would be developed in stages, bonding associated with each activity would be designed to accommodate changes in expected reclamation costs, as well as to account for areas of completed reclamation.

**TABLE 4.1**  
**ESTIMATED STAGE 1 RECLAMATION COSTS**

	ACRES DISTURBED (STAGE 1)	ESTIMATED RECLAMATION COST <sup>(1)</sup>
Roads	47	\$ 75,200
Mine pits <sup>(2)</sup>	--	98,000
Waste rock and soil storage piles	90	294,400
Leach pads/drainage ditches	21	131,270
Cyanide solution storage facilities	5	227,780
Buildings and pads	15	179,250
Removal of buildings, equipment, tanks, vats, etc. <sup>(3)</sup>	--	--
Removal of fencing	--	<u>12,000</u>
	<b>TOTAL</b>	<b>\$1,017,900</b>

88-148 (8/13/90)

(1) Includes BLM/County and RWQCB Bonds

(2) Mine pit reclamation cost is based upon rock staining costs and public safety features, which are not related to surface acreage.

(3) Demolition of structure foundations is included in the estimated reclamation cost for buildings and pads. Estimated salvage values of structural steel and other building components (exclusive of the equipment housed in these structures) will exceed the estimated \$1.2 million cost for dismantling and removing these structures.





#### 4.1.3.3 Mitigation Compliance Monitoring

1. CEQ regulations (40 CFR §1505.3) provide that agencies may require monitoring to assure that their decisions are carried out. Mitigation measures and other conditions established in an EIS or otherwise provided for as part of the decision shall be implemented by the Lead Agency or other appropriate reporting agency. Monitoring and enforcement programs are designed to assure that such required conditions are satisfactorily completed.
2. CEQA was amended by AB 3180 in January, 1989 (Cal. Pub. Res. Code §21081.6), requiring State and local agencies to establish reporting or monitoring programs for projects approved by a public agency where specified findings are made based upon an EIR. The types of actions which must be reported on or monitored include the implementation of environmental impact mitigation measures, adopted project alternatives, or project alterations which were required to reduce environmental impacts.
3. The Draft EIS/EIR explained that a detailed monitoring program would be developed to demonstrate compliance with measures adopted as conditions of approval to avoid significant effects on the environment. The program would, at a minimum, identify what measure was undertaken, when it was completed, and the agency having jurisdiction, by law, over the natural resource (Draft EIS/EIR, page 6.1-2). Although public circulation of monitoring programs is not required by either NEPA or CEQA, a Draft Mitigation Compliance Program was circulated as part of the Supplement (Appendix E). The program designed for this project includes procedures for monitoring, reporting, and verification of the environmental mitigations and other requirements that will be specified by the agencies as conditions of project approval. In addition, the responsibilities of the Applicant and compliance monitors, as well as the types of required reports have been described. Mitigation compliance programs will be adopted by several agencies which have discretionary authority over the project, therefore, the specific requirements may differ. Each agency adopts feasible mitigation measures for those portions of the project which it controls or regulates. The adopted mitigation measures will be expressed as conditions of project approval. The Supplement therefore described a mitigation compliance program format that is specific enough to allow meaningful public review, but general enough so that it could be adopted by different regulatory agencies.

4. One reviewer commented:

- "We know from experience that positive language, including mitigation commitments, in environmental documents does not necessarily translate into effective implementation and tangible environmental protection."

A program of monitoring, reporting, and verification would be required for the Castle Mountain Project to prevent this situation from occurring. The specific intent of the California legislature in adopting AB 3180 (Cal. Pub. Res. Code §21081.6), was to require mitigation monitoring and reporting programs. In addition, County Code (§81.0225) states that any violation of the code or plan is a public nuisance. The County may bring action to abate or enjoin the violation in any appropriate manner.

5. Other reviewers asked questions such as:

- "Who is going to monitor all of the items that this summary EIS/EIR contends will be monitored? Who will monitor compliance with vanpooling, reclamation of the site, protection of paleontological resources, 35 MPH speed limits (and compliance with those limits, not just putting up the signs), handling of hazardous wastes, appropriate fencing, spill control measures and the dozens of other promises made in this Draft EIS?"

"Equally important, who is going to pay for all of this monitoring?"

6. The Supplement (Appendix E) explained that a Mitigation Compliance Coordinator (MCC) would be employed by the Applicant to monitor compliance with mitigation measures. The MCC would be assisted, as necessary, by technically qualified staff and consultants in monitoring and reporting of conditions requiring particular expertise, such as wildlife, vegetation, and hazardous materials. In this manner, the costs of compliance monitoring would be borne by the Applicant. The MCC would be the contact person to supply information on mitigation compliance that would be required by the BLM and County. The County also has authority to levy charges, fees, or assessments to recover the costs they incur in verifying the accuracy and completeness of the required reports. Results of onsite monitoring would be reported to the BLM and County at regular intervals. The agencies would verify the accuracy of the reports by reviewing the baseline data and performing onsite inspections. The reports would be available for review by the public.



#### 4.1.4 RECLAMATION

1. Draft EIS/EIR comments frequently addressed reclamation. Generally, the comments on reclamation reflected uncertainty as to the goal of this activity, and a concern that reclamation activities be successfully completed.
2. Comments relating to the goal of reclamation were commonly expressed in the following forms:
  - "The Draft Environmental Impact Statement is deficient since it does not require complete reclamation."
  - "Complete reclamation is not required by the EIS, nor is restoration of habitat required. If a mine is to be developed, then when the mining ends the land should be made as it was before."
3. These comments reflect an impression that the purpose of mined land reclamation is equivalent to site restoration. This is not what is intended or required by the laws and regulations governing this activity. Implementation of reclamation procedures for the Castle Mountain Project would be required by the BLM, in accordance with BLM's regulations at 43 CFR 3809, and by the County, in accordance with SMARA (Cal. Pub. Res. Code §2710 *et seq.*). These laws and regulations provide descriptions as to what reclamation entails, as summarized in the following:
  - 43 CFR 3809.0-5, defines reclamation, in part, as " . . . taking such reasonable measures as will prevent unnecessary or undue degradation of Federal lands, including reshaping land disturbed by operations to an appropriate contour and, where necessary, revegetating disturbed areas so as to provide a diverse vegetative cover."
  - SMARA (Cal. Pub. Res. Code §2733) defines reclamation as the combination of land treatments that minimize water degradation, air pollution, damage to aquatic or wildlife habitat, and erosion. SMARA, (Cal. Pub. Res. Code §2712), explains that the intent of mining and reclamation policy is to assure that:
    - "Adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses."
    - "The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment."
    - "Residual hazards to the public health and safety are eliminated."



4. Other concerns on reclamation commonly expressed by commenters related to the successful completion of reclamation activities, and included statements such as:
  - "What guarantees do we have that reclamation of the site in 10 years will be adequate?"
  - "What happens if the price of gold falls, or if for other reasons the project is abandoned in midstream?"
5. The Proposed Action would operate for approximately 10 years, and as explained in the Draft EIS/EIR (Section 3.2.8, Reclamation), some reclamation activities would be phased to coordinate with project operations. This would be possible for measures such as surface contouring for proper drainage and erosion control, and rock staining to reduce color contrasts. Measures to provide for public safety such as removal of equipment, slope stabilization, and establishment of barriers to prohibit vehicle access into mine pits, would be implemented upon the completion of mining. Revegetation would be initiated as activities are discontinued on an area-by-area basis and can begin as early as the first year following project start-up. Therefore, it is expected that vegetation would be established over many of the disturbed areas by the time project operations are terminated. Final reclamation procedures would entail preparation of surfaces and establishment of vegetation at remaining areas.
6. It is recognized that growth of long-lived shrubs and Joshua trees would require an extended period of time. Based upon the results achieved from revegetation during project operations, it is expected that the site-specific recovery rate would be determined, and that an appropriate schedule could be set for follow-up activities. The Draft EIS/EIR (page 6.4-3) therefore recommended that a post-project monitoring program be developed for the period following project completion, to verify revegetation results and determine what additional measures would be necessary. The Draft EIS/EIR Supplement included a mitigation compliance program that could accommodate post-project monitoring, as required, at project completion to verify revegetation results and determine what additional measures may be necessary.
7. If the project were, for some reason, discontinued at an early date, the Applicant would still be required to complete reclamation activities in compliance with 43 CFR Subpart 3809 and SMARA. The BLM, County, and RWQCB would require that appropriate bonds be provided by the Applicant prior to surface disturbing activities. These bonds would guarantee completion of project reclamation to the satisfaction of the agencies even in the event that the project is prematurely terminated.



#### 4.1.4.1 Mine Pit Backfilling

1. Some commenters on the Draft EIS/EIR stated opinions such as:
  - "Backfilling as part of the reclamation plan is not adequately considered in the Draft EIS/EIR."
  - Neither the ... (Draft EIS/EIR) nor the ... (Draft EIS/EIR Supplement) ... fully considers ... the ... costs of backfilling the pits created by mining operations."
2. Complete backfilling of the project mine pits with overburden and/or leached ore was evaluated in the Draft EIS/EIR (Section 3.3.1.2, Alternative Overburden and Processed Ore Disposal). Based upon technical constraints and environmental considerations discussed in the Draft EIS/EIR, backfilling was eliminated from further consideration.
3. Additional suggestions for methods to accommodate some form of mine pit backfilling activity into the project were submitted by commenters on the Draft EIS/EIR and Supplement. In April, 1990 the SCLDF (representing the Sierra Club, The Wilderness Society, Natural Resources Defense Council, and Desert Survivors) met with the California BLM State Director to request that complete mine pit backfilling or partial backfilling be reconsidered. SCLDF also requested that BLM require the Applicant to submit detailed economic data to verify whether or not backfilling costs would render the Castle Mountain Project infeasible.
4. A June 29, 1990 letter from the State Director to SCLDF stated the California BLM position on mine pit backfilling with respect to economic considerations. The letter, which is included in Appendix I, indicated that cost alone should not be the overriding consideration in determining whether or not backfilling activities should be required by the BLM in reviewing a proposed mining operation. Other objectives to be considered include:
  - Determining what is usual, customary and proficient in the industry.
  - Complying with Federal and State law.
  - Assuring against pollution of natural water resources.
  - Providing for measures to protect human health and safety.
  - Considering the adverse impact to backfilling, i.e., energy consumption.
  - Evaluating the potential for future mining from mineralization in the pit area that is not now economic.
  - Overall, provide for reasonable measures to protect the scenic, scientific and environmental values of the area impacted by mining.
  - Determining as an option whether the sequential filling of other open pits in the flow of ongoing open pit excavations is practicable.
  - Providing for a productive land use of the pit area upon cessation of the mining operation.

However, in order to provide full disclosure of the relevant considerations, the BLM requested that the Bureau of Mines provide a "net present value" analysis of the economics involved in an open pit heap leach gold mine and backfilling costs. That analysis is included in Appendix I. A discussion of those results is provided in Section 3.3 (Alternative Mitigation Measures Considered) of this Final EIS/EIR.

5. As discussed in Section 3.3.1.1 of this Final EIS/EIR, the feasibility of backfilling hard rock open pit mines was evaluated subsequent to the passage of SMCRA (30 U.S.C. § 1201). The NRC report *Surface Mining of Non-Coal Mines* indicated that site restoration by backfilling would "...be an enormous economic burden of uncertain benefit ..." (NRC, 1979). However, in response to the recent interest in the potential for backfilling the Castle Mountain Project mine pits, this Final EIS/EIR includes an expanded discussion of mine pit backfilling for final consideration. The analysis, which is included in Section 3.3 (Alternative Mitigation Measures Considered), considers three potential types of backfilling activities, and evaluates the environmental consequences of each.

#### 4.1.4.2 Revegetation

##### 4.1.4.2.1 Post-Disturbance Vegetation Recovery

1. Many commenters were apparently skeptical about recovery of desert vegetation. A commenter wrote:
  - "The revegetation plan is overly optimistic in its projections of 30 to 60 years ... Natural replacement of a single creosote bush in the Mojave Desert under ideal conditions has been calculated to take more than 50 years ..."
2. Federal regulations designed to prevent unnecessary or undue degradation of Federal lands include provisions for reclamation and revegetation "so as to provide a diverse vegetation cover" (43 CFR 3809.0-5). SMARA similarly provides for revegetation when it is called for in a reclamation plan.
3. As explained in the Draft EIS/EIR (page 3.2-49), "revegetation is an important part of reclamation plans, because it can provide erosion and sediment control, dust control, slope stability, wildlife habitat, and visual resource enhancement." It was therefore determined that revegetation procedures should be implemented in conjunction with Castle Mountain Project reclamation. Because specific revegetation procedures are to a large degree determined by site specific conditions, it was recommended that the Applicant also develop an onsite revegetation



research program acceptable to the BLM and County. The Draft EIS/EIR (pages 3.2-49 and 3.2-50) included general objectives and revegetation methods that would be considered in the program. Appropriate methods from the onsite research would then be adopted and implemented in the revegetation program.

4. Disturbance and removal of mature vegetation would create an environment where plant colonization would begin through natural seeding, and through the revegetation program. This early successional stage would provide a usable habitat for wildlife. Based upon a review of revegetation literature and observations of natural recovery from previous surface disturbances in the vicinity of the site, it was indicated in the Draft EIS/EIR (page 5.4-5) that growth of the vegetation community would be a lengthy process. It was concluded that a mature stand of vegetation, with cover and species composition approximating predisturbance conditions, would not be expected for between 30 and 60 years.
5. To respond to this concern, the site was revisited to more specifically assess species recovery from previous onsite disturbances. Aerial photographs were used to date surface disturbances resulting from overburden dumping at the clay quarries within and adjacent to the site boundaries. While it is not known exactly when this overburden disposal was concluded, it is known that the disposal sites were still active in 1960. This means that the maximum period for vegetation recovery on these sites is less than 30 years. Photographs of vegetation growth on the clay quarry overburden are shown in Figures 4.2 (Natural Revegetation on North Clay Pit Overburden After 30 Years), and 4.3 (Natural Revegetation on South Clay Pit Overburden After 30 Years). Perennial plant species represented on the disturbed areas are shown in Table 4.2 (Natural Recovery of Perennial Plant Species on Clay Quarry Overburden Piles). An inventory of adjacent undisturbed vegetation was also completed for comparison, as shown in the table. As the photographs and species lists indicate, revegetation recovery has in some areas been very successful. These overburden piles were constructed without regard to revegetation recovery and no reclamation was completed (the quarries were mined prior to the adoption of SMARA). Moreover, clay soils are typically a poor substrate for vegetation. This relatively fast rate of vegetation recovery is attributed primarily to the sites' elevation and rainfall regime. However, it should be noted that clay quarry areas with compacted soils and/or continued disturbance showed little or no vegetation recovery. This demonstrates the importance of minimizing soil compaction in order to promote more effective revegetation.



Overview of plant community on top of relatively flat overburden.



Young Joshua trees (*Yucca brevifolia*) in overburden disturbance area, colored marker shows one foot increments. View northeast.

FIGURE 4.2

**NATURAL REVEGETATION OF  
NORTH CLAY PIT OVERBURDEN  
AFTER 30 YEARS**

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, INC.







Close-up of overburden slope. Large shrubs are creosote bush (*Larrea tridentata*). View northwest.



Overview of plant community on south facing overburden slope. Active clay quarry area is at the top.

FIGURE 4.3

**NATURAL REVEGETATION ON  
SOUTH CLAY PIT OVERBURDEN  
AFTER 30 YEARS**

CASTLE MOUNTAIN PROJECT

**ENVIRONMENTAL SOLUTIONS, INC.**



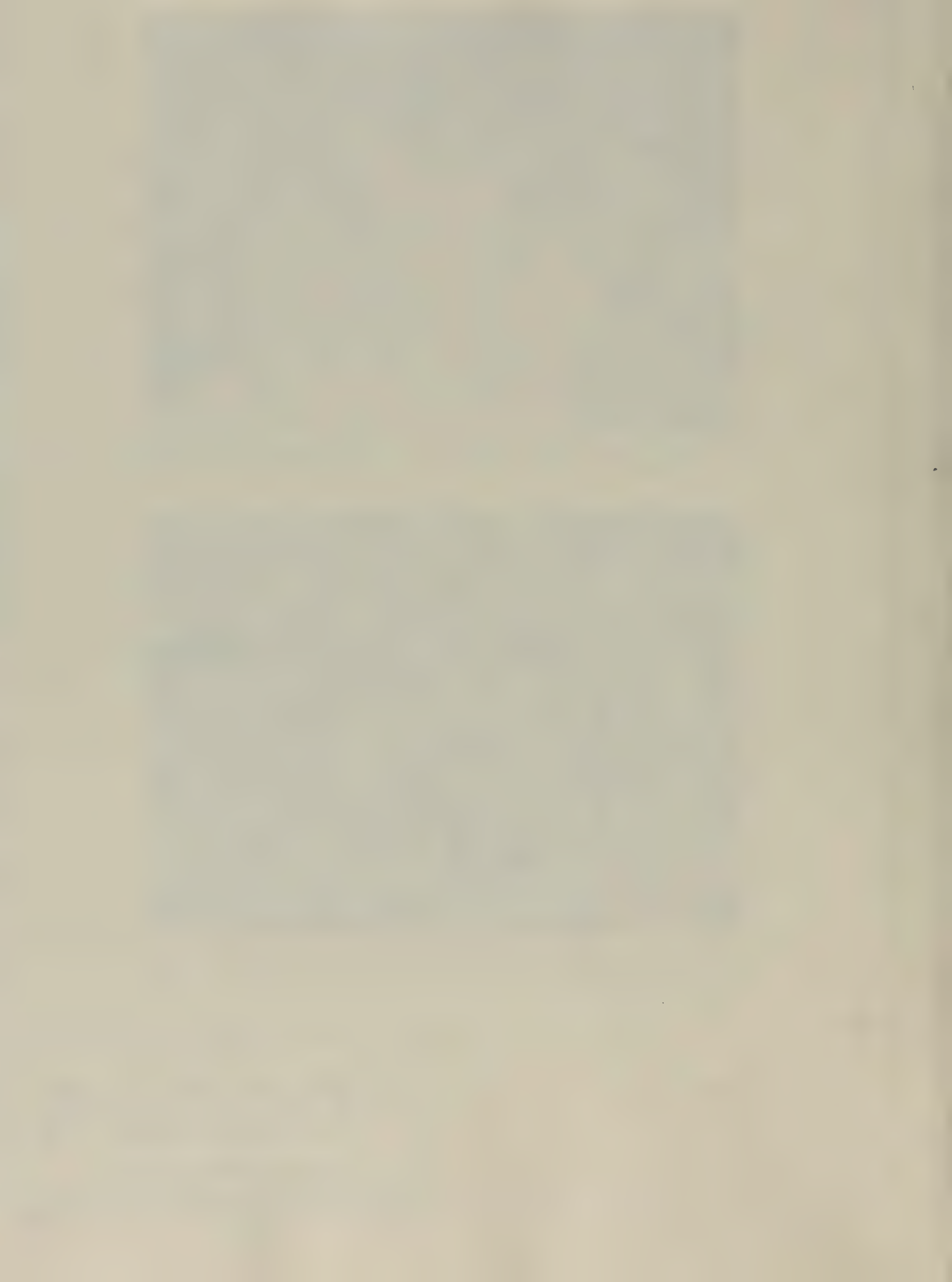


TABLE 4.2

# NATURAL RECOVERY OF PERENNIAL PLANT SPECIES ON CLAY QUARRY OVERBURDEN PILES

SPECIES ON DISTURBED GROUND 30 YEARS FOLLOWING DISTURBANCE	SPECIES ON ADJACENT UNDISTURBED AREAS
<b>ASTERACEAE (Sunflower Family)</b> <i>Brickellia desertorum</i> <i>Ericameria linearifolia</i> <i>Gutierrezia microcephala</i> <i>Stephanomeria pauciflora</i> <i>Xylorhiza tortifolia</i>	<b>ASTERACEAE (Sunflower Family)</b> <i>Brickellia desertorum</i> <i>Ericameria linearifolia</i> <i>Gutierrezia microcephala</i> <i>Stephanomeria pauciflora</i> <i>Viquiera parishii</i> <i>Xylorhiza tortifolia</i>
<b>BRASSICACEAE (Mustard Family)</b> <i>Lepidium fremontii</i>	<b>BRASSICACEAE (Mustard Family)</b> <i>Lepidium fremontii</i>
<b>CACTACEAE (Cactus Family)</b> <i>Opuntia erinacea erinacea</i>	<b>CACTACEAE (Cactus Family)</b> <i>Opuntia erinacea erinacea</i> <i>Opuntia acanthocarpa coloradensis</i>
<b>CHENOPODIACEAE (Goosefoot Family)</b> <i>Atriplex canescens</i>	<b>CHENOPODIACEAE (Goosefoot Family)</b> <i>Atriplex canescens</i>
<b>FABACEAE (Pea Family)</b> <i>Acacia greggii</i>	<b>FABACEAE (Pea Family)</b> <i>Acacia greggii</i>
<b>LAMIACEAE (Mint Family)</b> <i>Salazaria mexicana</i>	<b>LAMIACEAE (Mint Family)</b> <i>Salazaria mexicana</i> <i>Salvia dorrii dorrii</i>
<b>POLYGONACEAE (Buckwheat Family)</b> <i>Eriogonum fasciculatum polifoium</i> <i>Eriogonum inflatum inflatum</i>	<b>POLYGONACEAE (Buckwheat Family)</b> <i>Eriogonum fasciculatum polifoium</i> <i>Eriogonum inflatum inflatum</i>
<b>ROSACEAE (Rose Family)</b> <i>Coleogyne ramosissima</i>	<b>ROSACEAE (Rose Family)</b> <i>Coleogyne ramosissima</i> <i>Prunus fasciculatus fasciculatus</i>
<b>ZYGOPHYLACEAE (Caltrop Family)</b> <i>Larrea tridentata divaricata</i>	<b>ZYGOPHYLACEAE (Caltrop Family)</b> <i>Larrea tridentata divaricata</i>
<b>AGAVACEAE (Agave Family)</b> <i>Yucca brevifolia jaegeriana</i> <i>Yucca schidigera</i>	<b>AGAVACEAE (Agave Family)</b> <i>Yucca brevifolia jaegeriana</i> <i>Yucca schidigera</i>
<b>POACEAE (Grass Family)</b> <i>Hilaria jamesii</i> <i>Stipa speciosa</i>	<b>POACEAE (Grass Family)</b> <i>Hilaria jamesii</i> <i>Stipa speciosa</i> <i>Muhlenbergia porteri</i>
	<b>SOLANACEAE (Nightshade Family)</b> <i>Lycium cooperi</i>





6. The Draft EIS/EIR (page 5.4-5) stated that natural revegetation that has occurred over the Hart townsite during the last 70 years provides evidence of vegetation recovery supporting a 30- to 60-year time frame. Natural vegetation recovery on the clay quarry overburden sites further support this estimate.

#### 4.1.4.2.2 Revegetation Goals

1. The Draft EIS/EIR (page 6.4-2) recommended as a mitigation measure that "goals for vegetation recovery" be determined based upon onsite research as part of the revegetation program, since such goals should be based on site-specific scientific data in order to be as realistic and accurate as possible.
2. Many commenters believed that specific standards for revegetation recovery should be established at this time. This concern was primarily related to a desire that reclamation bonding be linked to a specific revegetation standard. Comments included:
  - "How much reconstructed plant cover will the Applicant be legally required to produce?"
  - "This plan should contain the goals of the revegetation effort and the means that would be implemented to correct any failures of the initial efforts."
  - "What will the final species composition be when the company is allowed to recover its bond?"
  - "Quantitative goals for artificial and natural recovery need to be established . . . prior to issuing a permit. Without such clearly defined goals and measures of success, we have no guarantee that any significant amount of revegetation by dominant, native species, will occur . . ."
3. Neither NEPA nor CEQA require that the acceptable compliance standards of a mitigation measure or its bonding release criteria be addressed in an EIS/EIR. While both the 43 CFR 3809 regulations and SMARA provide for consideration of revegetation as part of reclamation procedures, neither of these require that a specific standard be set. However, it is recognized that the agencies will need to determine at what point the Applicant has fulfilled its requirement to revegetate the surface disturbances in order that the bond be relinquished. Similar standards will need to be determined for each reclamation procedure for which a bond is required. The

Applicant has therefore initially proposed in its reclamation plan (Viceroy, 1990) that, for vegetation, bond release would be governed by two parameters, plant density and species composition:

- "The parameters will be based on a percentage recovery when compared to representative, relatively undisturbed, control sites. The 10-year goal for density, using only perennial species, will be 21 percent of the control. Using a sigmoidal curve, the 5-year goal for density will be six percent of the control. The 10-year goal for diversity will be 15 percent expressed as a similarity index of the control. The 5-year goal for diversity, also based on a sigmoidal curve, will be four percent expressed as a similarity index of the control."

#### 4.1.5 WATER RESOURCES

1. Issues surrounding the proposed Castle Mountain Project plans to withdraw ground water and use cyanide for ore processing have generated the most public interest since the initial proposal and public scoping process. Concerns about these activities were similarly expressed during the Draft EIS/EIR circulation period. Some of the concerns continued to focus on the potential effect to Piute Spring flow from ground water withdrawal and questioned the results of the analysis completed for the Draft EIS/EIR. Other commenters requested clarification on points addressed in the Draft EIS/EIR, such as the monitoring program or facilities design for ground water protection. Comments on these issues are addressed in the following sections.

##### 4.1.5.1 Ground Water Withdrawal and Piute Spring Flow

1. Of all the issues raised through the public scoping process and addressed in the Draft EIS/EIR, Piute Spring has perhaps received the most attention. Because of the complexities inherent to the issue of ground water, including basin size, recharge, flow and discharge, and the potential impact of withdrawal, an extensive analysis was completed for the Draft EIS/EIR. This culminated in a report entitled: *Castle Mountain Project: Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring* (Environmental Solutions, Inc., 1989). This report was summarized as the hydrogeology discussions in the Draft EIS/EIR (Sections 4.3 and 5.3, Water Resources).



## 2. Comments included:

- "It is possible that the cyanide operation will also cause a drop in the water table at Piute Creek, a critical area of the region which supports bighorn sheep and other animals and birds."
- "Piute Spring may be depleted of much of its water and as a result riparian habitat would be affected."

Based upon the available data and potential impacts addressed in the Draft EIS/EIR, it is not expected that the Proposed Action would have the potential to affect Piute Spring.

3. Some comments reflected concerns for the accuracy of the analysis completed for the Draft EIS/EIR, based upon reports of contradicting studies/opinions indicating that Piute Spring *would* be affected by the proposed ground water withdrawals:

- "There are conflicting reports on whether or not the water withdrawals will effect Piute Spring. This needs to be resolved. Who do we believe?"
- "At least one hydrologic study, from the U.S. Geological Survey, contradicts the conclusions of your consultant."
- ". . .the independent hydrologist and the U.S. Geological Survey have stated that withdrawing the water, could very well reduce and even dry up Piute Creek. . ."

## 4. The Draft EIS/EIR analysis, which was completed to determine if the Proposed Action's ground water withdrawals would affect Piute Spring, was independently prepared by expert hydrologists and geologists responsible to the directives of the BLM and County in consultation with other agencies and experts. The methods used, and techniques applied, were based upon scientific analyses common to hydrogeologic studies. The computer modeling technique used is employed by the U.S. Geological Survey (USGS). The data, criteria, methods, and results were published and circulated in the Draft EIS/EIR for review by agencies, organizations, and the general public. The detailed analysis (Environmental Solutions, Inc., 1989) has been made available for public review and comment.

5. Comments asserting that a USGS hydrologic study contradicts the Draft EIS/EIR conclusions are incorrect. The study of reference, entitled *Ground Water Resources of Lanfair and Fenner Valleys and Vicinity* (USGS, 1984), was referenced in the Draft EIS/EIR and used as background information in preparing the analysis. That study was prepared as an inventory of water resources, and does not evaluate the potential effects of ground water withdrawal from the project. Moreover, contact with the author of that study has indicated concurrence with the results of the Draft EIS/EIR analysis (Freiwald, 1989).

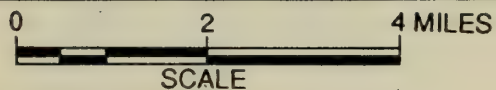
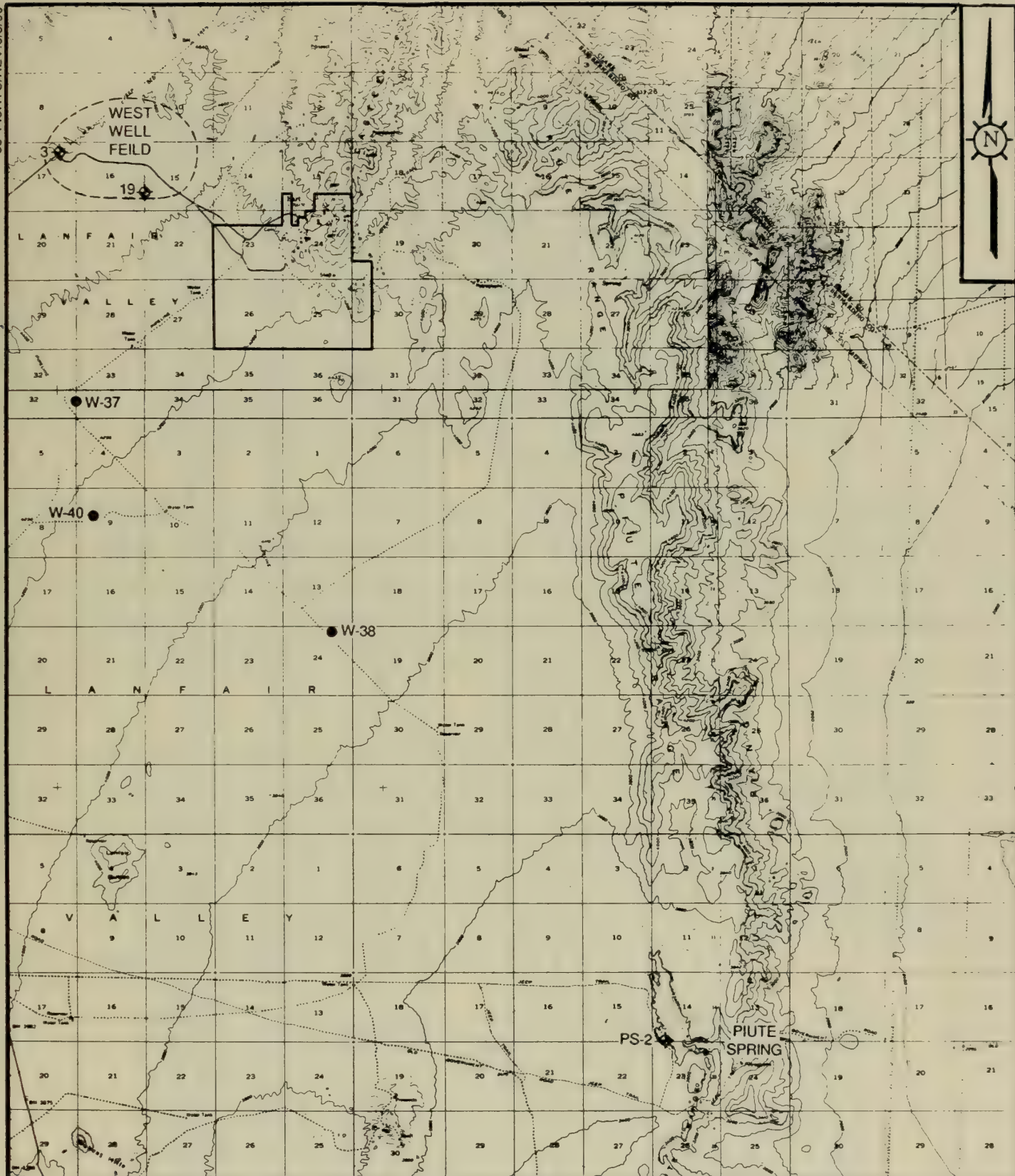
6. Other opinions on the issue of project effects on Piute Spring have been expressed by some individuals and are included in the specific comments addressed in the following Sections: Section 4.2 (Responses to Agencies), Section 4.3 (Responses to Organizations), and Section 4.4 (Responses to Individuals). However, no substantive alternate methodology, conflicting data, or detailed analysis has been presented that would change the conclusions of the analysis prepared in the Draft EIS/EIR.
7. The BLM and County will make the final determination as to which conclusions are valid. CEQA explains that "disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts" (CEQA Guidelines, Section 15151).
8. The Draft EIS/EIR also suggested that a program of ground water monitoring be employed to assure that no effect on Piute Spring would occur. Some readers commented:
  - "If BLM is serious about ensuring . . . no noticeable effect at Piute Spring, it should at least require that if ongoing monitoring demonstrates *any* reduction in water flow or riparian vegetation at Piute Spring, all Viceroy Corporation ground water pumping will immediately cease."
  - "What if the predictions don't remain valid? What kind of 'reevaluation' will occur? These should be stated *specifically* so that the mine will be accountable for resolving possible problems in a way that is environmentally sound and responsive to public concerns."
9. California Public Resources Code, Section 21081.6, contemplates that mitigation monitoring and reporting programs will be finalized at the time of project approval. However, a preliminary plan for ground water monitoring and contingency water supply to Piute Spring has been prepared and submitted to the BLM and County (see User's Guide). The plan includes a method for ground water monitoring in Lanfair Valley for purposes of:
  - Observing the effects of ground water withdrawals by the Castle Mountain Project.
  - Providing an early indication if changes in ground water levels are different from those predicted in the Draft EIS/EIR.
  - Facilitating recalibration and refinement of ground water flow models of the Lanfair Valley aquifer, if necessary.
  - Providing a detailed record of spring flow volume and water quality at Piute Spring.



The contingency plan includes the following actions:

- Installation of additional monitoring well(s).
- Recalibration of Draft EIS/EIR ground water hydrogeologic model and reassessment of the aquifer.
- Providing alternate water supply to Piute Spring.
- Reduction of project water use or provide water from alternate source.

10. Initially, the mitigation monitoring and reporting program would consist of the development of two additional ground water monitoring wells (W-37 and W-38) in Lanfair Valley, as shown in Figure 4.4 (Monitoring Well Locations). Water levels would be collected monthly from these wells, together with water levels from existing wells W-3, W-19, and PS-2. Measurements of water flow at Piute Spring, which have been collected monthly since June, 1988, would continue as part of the monitoring and reporting program.
11. The need for additional mitigation action to ensure that ground water withdrawals for the project would not affect Piute Spring would be based on whether water level drawdowns in Well W-37 exceed those predicted in the hydrogeologic model prepared for the Draft EIS/EIR. A basic description of the ground water level declines at W-37 that would initiate additional actions under the mitigation monitoring, and reporting program are presented in Table 4.3 (Well Water Level Decline Action Plan).
12. The hydrogeologic model used for the Draft EIS/EIR analysis predicted that water level declines at the location of well W-37 would be approximately as shown by the figures in row B of Table 4.3, and that declines of this magnitude at this location would have no effect on Piute Spring.
  - In the event ground water level declines at W-37 exceeded those shown in Row A of Table 4.3, a new monitor well (W-40) would be constructed approximately 1.5 miles south of W-37. The new well would be monitored at the same frequency as W-37.
  - In the event ground water level declines at W-37 reach the values shown in Row B, the ground water model would be recalibrated and rerun to determine if any impact to Piute Spring would be anticipated. The modeling report and other information would be submitted to BLM.
  - BLM would initiate a review to determine if additional mitigation actions would be required. Written and published notice would be given to affected and interested parties to afford them the opportunity to review and comment on the proposed actions for a period of 30 days after publication of such notice. It is proposed that this notice and comment period would be included as a condition of approval to BLM's Record of Decision

**LEGEND**

- ◆ EXISTING MONITORING WELL
- PROPOSED MONITORING WELL

**FIGURE 4.4****MONITORING WELL LOCATIONS**

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**TABLE 4.3**  
**WELL WATER LEVEL DECLINE ACTION PLAN**

ACTION TAKEN	YEARS 1, 2	YEARS 3, 4, 5	YEARS 6, 7, 8	YEARS 9, 10
A	4.0 feet	10.0 feet	16.0 feet	20.0 feet
B	6.0 feet	13.0 feet	20.0 feet	25.0 feet
C	8.0 feet	15.0 feet	24.0 feet	30.0 feet
D	10.0 feet	18.0 feet	28.0 feet	35.0 feet

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- A. Construct new monitor well W-40 approximately 1.5 miles south of W-37, and monitor W-40 at same frequency as W-37, after W-40 is completed.
- B. Recalibrate ground water model and re-run to evaluate if ground water level declines might occur so as to cause flow in Piute Spring to decrease. The modeling report and other information would be submitted to BLM to enable that agency to issue a decision document, with notice and comment period, on a course of action to be implemented.
- C. In the event that ground water level declines at W-37 exceeded those shown in Row C prior to BLM's decision referenced in B becoming final, ground water pumping rates would be reduced to 300 gpm until BLM's decision document has been given public review and BLM has determined that the declines in water levels at W-37 will not adversely affect flows at Piute Spring.
- D. In the event that ground water level declines at W-37 exceeded those shown in Row D prior to BLM's decision referenced in B becoming final, ground water pumping rates would be reduced to 150 gpm until BLM's decision document has been given public review and BLM has determined that the declines in water levels at W-37 will not adversely affect flows at Piute Spring.

respecting the project, and that a party wishing to appeal the decision on the proposed mitigation actions to be implemented shall exercise its appeal rights pursuant to 43 CFR Section 3809.4, Appeals.

- In the event ground water level declines at W-37 exceeded those shown in Row C of Table 4.3 prior to BLM's decision respecting additional mitigation measures (if any) becoming final, ground water pumping rates would be reduced to 300 gpm until BLM's decision document has been given public review and BLM has determined that the declines in water levels at W-37 will not adversely affect flows at Piute Spring.
- In the event ground water level declines at W-37 exceeded those shown in Row D of Table 4.3 prior to BLM's decision respecting additional mitigation measures (if any) becoming final, ground water pumping rates would be reduced to 150 gpm until BLM's decision document has been given public review and BLM has determined that the declines in water levels at W-37 will not adversely affect flows at Piute Spring.

13. Readers desiring more detailed information on the proposed ground water monitoring plan are referred to the complete report, entitled *Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring* (Mark Group, 1990), which is incorporated herein by reference. The cited report is on file and available for public review at the locations indicated in the User's Guide of this Final EIS/EIR.

#### 4.1.5.2 Cyanide Use and Ground Water Protection

1. It was recognized, as a result of the public scoping process, that the potential threats to public health and the environment posed by the use of cyanide chemicals to leach gold ores was a common concern. Many commenters on the Draft EIS/EIR voiced similar concerns. The public's concern about cyanide has resulted in an extensive regulatory framework governing the transportation, handling, storage, and use of cyanide chemicals. This issue was recently discussed in an issue of California Geology:

"All mines (and other businesses) using cyanide must comply with numerous local, State, and Federal regulations and obtain permits from regulating agencies. The agencies involved with the transportation, storage and use of cyanide include: (1) Federal agencies -- EPA and the Mine Safety Health Administration (MSHA), (2) State agencies -- Department of Health Services, the Department of Transportation (Caltrans), the Occupational Safety Health Administration (OSHA), and the RWQCB. The California Highway Patrol must also be notified when cyanide is transported. Local air pollution, law enforcement, emergency response, and health agencies must be notified when cyanide compounds are used in mining operations. Other agencies may become involved under various circumstances."



"The mining industry in California and in general has compiled a very impressive safety record. Cyanide safety precautions are strictly enforced by the mining companies and by the manufacturers of cyanide to ensure the safety of the workers and maintain the reputations of the companies" (Silva, 1988).

2. Cyanide chemicals are used in a wide variety of processes and products. Hydrogen cyanide (HCN) is a colorless gas, lighter than air. It is the basic compound from which many other cyanide chemicals are derived, including nylon, several other plastics, sodium cyanide (NaCN), and calcium cyanide (Ca[CN]<sub>2</sub>). About one billion pounds of HCN are used in the United States each year. NaCN consumption is about 150 million pounds, most of which is used in the mining industry, particularly for the extraction of gold and silver from ores containing these precious metals (Geyer, 1990).
3. Sodium cyanide is a white, dry, non-volatile solid. It is usually shipped in briquette form, packaged in drums or other containers. For use in gold leaching, the briquettes are dissolved in water under alkaline conditions, which prevents HCN from forming. Briquettes exposed to moisture will slowly release HCN. Since the gas is lighter than air, it quickly dissipates if there is adequate ventilation. It is essential to keep cyanide chemicals separate from acids, as large quantities of HCN are generated if such chemicals are brought into contact with acid.
4. Manufacturers of cyanide chemicals maintain 24-hour telephone hot lines to provide accurate information in the event of a spill. Since NaCN is a non-volatile solid, cleanup after a spill does not customarily present unusual difficulties or decontamination problems. Should a spill occur along a highway, local hazardous materials response teams would have the equipment needed to perform cleanup procedures. Spills at the project site would be handled by employees trained in such procedures.
5. "Free cyanide" is the term used to describe solutions of certain cyanide chemicals, including those most commonly encountered in the mining industry (HCN, NaCN, Ca[CN]<sub>2</sub>). Cyanide in this form is an extremely reactive material, readily susceptible to oxidation, volatilization, and photodegradation. Because of its reactivity, free cyanide does not present a long-term threat to the environment. In soil, cyanide salts such as sodium or calcium cyanide move only a short distance before being fixed by trace metals through complex formation, or before being biologically converted to nitrates. Cyanide is readily metabolized to non- or less-toxic forms by several species of microorganisms. Numerous studies have shown that bacterial, fungal and algal species can convert cyanide to carbon dioxide and ammonia. Many, if not all, plants

have the ability to metabolize cyanide, which is a source of nitrogen for plant growth. Its potential use as a fertilizer, however, is precluded by its toxicity to humans and many wildlife species (ASDR, 1988).

6. Solution storage and handling facilities at the project site as described in Section 3.1.2 of this Final EIS/EIR would be used to prevent wildlife from gaining access to the leaching solution. Some commenters requested additional information on the specific design of facilities to prevent contamination of soils and ground water from processing solution:
  - ". . .What are those 'impermeable synthetic liners' which will prevent leaching of chemicals into the aquifer? Intelligent evaluation of design and engineering requires more specific statements."
  - "Can the integrity of the leach ponds be guaranteed? Contamination by failure of the liners is a distinct possibility."
  - "A 'leakage detection system' is mentioned. What is it? How will it work?"
7. As discussed in the Draft EIS/EIR, prior to operation of heap leach facilities, the Applicant would need to obtain RWQCB approval of a waste discharge permit, as that agency regulates activities having a potential to discharge liquids to surface or subsurface waters of the State (see Draft EIS/EIR, page 2.4-7). The RWQCB permitting and review process includes detailed design engineering review and follows CCR, Title 23, Subchapter 15, Article 7 (Mining Waste Management) requirements and the Cal. Water Code §13000 *et seq.*
8. In reviewing the design details of synthetic liners, the RWQCB considers a number of factors, including: ground surface preparation to avoid liner penetrations, subsurface conditions, quality control procedures during construction, top liner protection to avoid penetration, measures to minimize hydrostatic pressure applied to the liner, and amount of load applied to the liner as a result of stacking ore on the pad and monitoring arrangements. According to CCR, Title 23 Subchapter 15, the liner itself must be at least 40 mil thick.
9. The leakage detection system is also required by Subchapter 15 regulations, and, as designed for this project, would monitor beneath the leach pads and basins for leaks in the following manner:
  - The pads are designed with a network of 2-inch perforated piping beneath the liner. The piping is located within the natural drainages of the pad to monitor the vadose zone. (This is a subsurface zone starting at ground level and extending down to the ground water level, which at this location is several hundred feet below ground level.)



- The emergency solution storage and stormwater basins would be double-lined, and equipped with a sump arrangement between the two liners. An 8-inch pipe for accessing the sump would be installed in each basin. A submersible pump could be lowered through the pipe into each sump to evacuate solution from the sumps.

10. The basins would normally be empty, as process solutions would be stored in steel tanks within the emergency solution storage basin. The monitoring system is designed and operated to provide the operator and regulatory agencies with the earliest possible warning if a release has occurred. Due to the depth to ground water, a system of ground water monitor wells would not provide a timely warning of leaks through the liners.

#### 4.1.5.3 Potential Stormwater Effects

1. The Draft EIS/EIR, in discussing the major project components, explained that the facilities that could potentially be damaged by stormwaters had been specifically sited away from flood plains, such that they would not be affected. The facilities of primary concern in this regard are the heap leach pads and solution storage areas, where cyanide solution would be used.

The Draft EIS/EIR (page 3.2-15) explained:

- "The heap leach pads and ponds would be located on the valley floor in the southwestern portion of the project site (see Figure 3.2.5). A large drainage passes through this westerly portion of the project site. Individual leach pads would be located on natural terraces some 10 to 12 feet above this drainage and designed so as not to interfere with intermittent flows in the drainage. Run-off from infrequent large storms that could occur in the area would, therefore, not present a hazard to the physical integrity of the leach pads or other processing facilities."

2. A commenter requested that more specific information be provided:

- "The Draft EIS/EIR should provide a map of 50- and 100-year flood levels for the drainage channel(s) on the site and identify whether any mining activities fall within these zones."

3. A map depicting intermittent stream beds and storm flows that would result from a 100-year storm event is shown in Figure 4.5 (Project Site Surface Water Drainage). As depicted, the major facilities have been sited so as not to be affected by storm flows, even from a major event such as a 100-year storm. Stormwater diversion structures would be used where necessary, such as at the northeast heap leach pad. The project design as planned, therefore, accommodates potential stormwater drainage.



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#### 4.1.5.4 Water Use

1. Some commenters were concerned about the legal appropriation of water and voiced opinions on how water should, or should not, be used. These concerns were expressed in statements such as:
  - "Why should commercial users of fossil water from public lands be allowed to take it free of charge?"
  - "What legal right do they have to take this water?"
  - "We are gravely concerned about water being used in this wasteful way . . ."
2. In the State of California, under a 1928 state constitutional amendment (Cal. Const. Art. 10, §2) , all waters must be put to reasonable and beneficial use, and any waters in excess of that reasonable and beneficial use are surplus waters available for use by others. There is no permit system in California for use of percolating ground water; an overlying right is exercised by pumping. The Applicant, therefore, has the same right to use ground water as any other individual, as long as such use is reasonable and beneficial.
3. The Draft EIS/EIR considered the proposed ground water withdrawals with respect to other existing beneficial users in Section 4.3 and 5.3 (Water Resources). Other water users in Lanfair Valley are generally distant from the projected ground water drawdown area and are not expected to be affected by the project. However, the Draft EIS/EIR (page 6.3-2) included a mitigation measure so that if other existing wells are affected by the proposed withdrawals, the Applicant would be required to improve them, such as by deepening.
4. To ensure that the proposed water use is reasonable, several water conservation measures were adopted into design plans. Initial projections of annual water requirements were reduced over 35 percent (from 1,140 to 725 acre-feet) through modified plans for operational procedures. Ore would be crushed to reduce leaching time and minimize water use, and drip irrigation would be used to apply solution to heap leach surfaces to reduce evaporation.

#### 4.1.6 WILDLIFE

##### 4.1.6.1 Cyanide Use and Wildlife Protection

1. Use of cyanide in the heap leach mining process was one of the most common concerns expressed during the Draft EIS/EIR Public Scoping Process (see Draft EIS/EIR, page 2.5-2).

As a result of this concern, and the subsequent analyses for the Draft EIS/EIR, several mitigation measures were incorporated into the project design to exclude wildlife from process solutions, including:

- "Storage ponds would be surrounded by chain link fencing and covered with netting designed to exclude terrestrial and avian wildlife."
- "Drip irrigation of solution would be employed (instead of conventional sprinklers) over the top of heap piles to minimize the potential for solution ponding."
- "The solution collection and distribution system would be operated as a closed circuit, with solution transported in a system of pipes instead of open ditches" (Draft EIS/EIR page 2.5-5).

2. Comments received on the Draft EIS/EIR included concerns for the effectiveness of some mitigation features, such as:

- "It is documented that ponds of cyanide solutions have exterminated about 2,000 birds in Arizona and Nevada."
- "Open cyanide solution ponds at Castle Mountain will adversely impact on birds and other wildlife who will use the cyanide ponds as a water source."
- "The practice of using netting and fencing to keep all wildlife from the cyanide ponds and collection and conveyance systems has not proven successful at other such heap leach mines."

3. The BLM recently established a Task Force to investigate the available data on migratory bird mortality at mining operations using cyanide on public lands. The results, as summarized in a memorandum to the Secretary of the Department of the Interior (see Memorandum 3809 (680) from Director, BLM, 1989a) indicate that a total of 2,759 migratory birds were lost at 41 operations during fiscal year 1988. Since that time, the BLM has required existing operations where mortalities have occurred to install physical isolation measures, and is requiring wider adoption of measures as necessary for new operations. The BLM in California requires mining operations on public lands to report on a monthly basis each animal mortality attributable to cyanide. Where such protective measures have been properly employed, mortality statistics indicate that they are effective.

4. The primary concern for potential exposure of process solution to wildlife has been regarding the solution storage ponds. The Draft EIS/EIR described a netting cover to mitigate this concern, but the Applicant has instead proposed an alternate design using steel storage tanks.



This design concept was described in the Supplement (and in Section 3.1.2, Solution Storage Areas, of this Final EIS/EIR), and is expected to provide greater wildlife protection than that from a netting cover.

#### 4.1.6.2 Desert Tortoise

1. The Mojave population of the desert tortoise has been determined by the FWS to be a *threatened* species, pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 *et seq.*). It was primarily a result of the emergency listing of the tortoise as *endangered* that the decision to issue a Supplement to the Draft EIS/EIR was made, so that the public would have the opportunity to comment on the project in light of the listing.
2. A detailed investigation was completed by the BLM in March 1990, of the onsite burrows that were described in the Draft EIS/EIR (Section 4.5.2.2, Desert Tortoise) and identified in the Supplement (Section 3.1.1.2, Project Site Tortoises). The purpose of this study was to ascertain the actual use by tortoises of burrows previously found on the site. Each burrow was visually inspected to its terminus using either natural light and mirrors, or a fiber-optic scope. The results, mapped in Figure 4.6 (Burrow Investigation Results) indicate that of the 45 burrows (located onsite and adjacent to the site), 39 were found to be attributable to animals other than the tortoise, and six were determined to be appropriate for potential use by tortoises. However, no tortoises, scat, or other sign were found to indicate use of these burrows by tortoises. Since tortoises would normally be inactive and found in their burrows at this time of year, it was concluded that their occurrence at the project site is very low. This finding is consistent with the known distribution of the desert tortoise, which is primarily found at elevations below about 4,100 feet, whereas the areas within the project site where operations will occur are located above 4,200 feet.
3. On January 17, 1990, the BLM entered into formal consultation with the FWS on the Castle Mountain Project, pursuant to Section 7 of the Endangered Species Act (16 U.S.C. §1536). Based upon its review, FWS issued a Biological Opinion on August 3, 1990 stating that the Proposed Action (the Castle Mountain Project) is not likely to jeopardize the continued existence of the desert tortoise. Correspondence on this issue is included in Appendix G.



TORTOISE SIGN (WOODMAN, 1989)

- B BURROW
- SH SHELL
- SC SCAT
- T LIVE TORTOISE

BURROW INVESTIGATION (BLM, 1990)

- PB POSSIBLE BURROW (burrow configuration/location indicates possible tortoise use)
- QB QUESTIONABLE BURROW (burrow configuration/location indicates unlikely tortoise use)
- OB OTHER BURROW (burrow configuration/location and associated sign indicates use by animals other than tortoise)
- CD CANID DEN
- EF EROSIONAL FEATURE
- NV NOT VERIFIED (burrow location could not be verified)

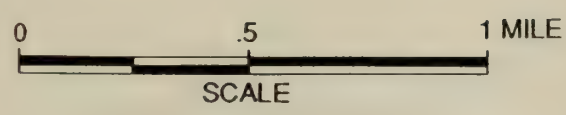


FIGURE 4.6

**BURROW INVESTIGATION RESULTS**

CASTLE MOUNTAIN PROJECT

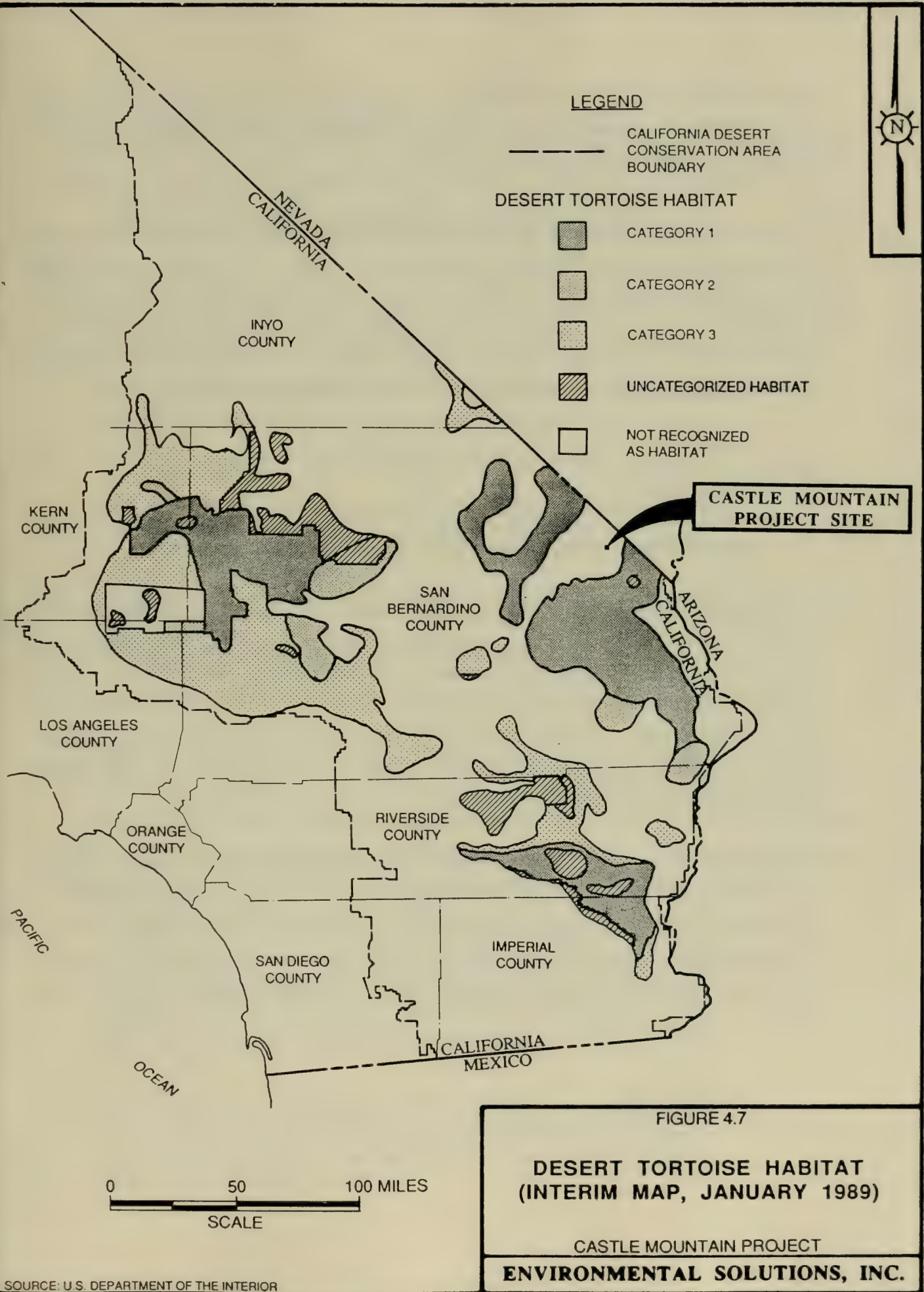
ENVIRONMENTAL SOLUTIONS, INC.

NOTE: SEE DRAFT EIS/EIR FOR DESCRIPTION OF PROJECT FACILITIES



4. Many commenters on the Draft EIS/EIR were concerned about potential impacts to the tortoise. Concerns expressed for habitat impacts included:
  - ". . .the construction of the road and operation of the facility will adversely impact the desert tortoise habitat."
  - "will there be mitigation for habitat loss along waterline routes, power lines, telephone lines and *future* gas lines; all of which are outside the site boundary but will impact tortoise populations?"
  
5. As discussed above, while individual tortoises are known to occur in Lanfair Valley, the area is not classified by BLM as desert tortoise habitat, as shown in Figure 4.7 (Desert Tortoise Habitat). Onsite burrow investigations have revealed that few tortoises are suspected to use the area. Castle Mountain Project surface disturbances would not affect the potential burrows identified onsite. The mine access route has been relocated to avoid traffic through high density habitat in Piute Valley (see Supplement Section 3.2.1, Mitigated Searchlight Access Route, and Section 3.1.3, Access, of this Final EIS/EIR). Offsite facilities (including waterlines, power lines, telephone lines, and the potential gas line) have been sited along existing roads to minimize the need for additional surface disturbance, as discussed in the Draft EIS/EIR (Section 3.2.5, Utilities, Ancillary Structures, Equipment, and Supplies). Because these alignments pass through habitat with very low tortoise densities, fencing and culverts along the access route were not considered necessary and this mitigation measure was deleted in the Supplement. The project site, however, will be fenced with tortoise-proof fencing, as stipulated in the Biological Opinion. Areas to be fenced are shown in Figure 3.1 of this Final EIS/EIR.
  
6. Other commenters expressed an interest in the specifics of desert tortoise mitigation measures recommended in the Draft EIS/EIR, such as:
  - "Bus/van pooling should be mandatory for all employees not just some and Viceroy should be mandated to finance tortoise habitat improvement projects such as purchasing land for public ownership in Ivanpah and Piute Valleys."

As a result of the Draft EIS/EIR analyses, the Applicant has included a program of bus/van pooling for employees that will be sponsored by the Applicant. The purpose of this program would be to reduce project traffic and potential impacts to the desert tortoise and other wildlife populations. Because project traffic would be relatively low, and the access route would avoid high density desert tortoise habitat, no significant impact to area wildlife is expected





from employee traffic. It is also expected that the majority of employees will participate in bus/van pooling (see Draft EIS/EIR Table 3.2.3, Estimated Weekday Traffic), and it is not considered necessary to mandate such participation.

7. In the event BLM chooses to require that habitat compensation be in the form of land acquisition, the Applicant has agreed to acquire 745 acres of private lands in the eastern Mojave region (i.e., extreme eastern California or southwestern Nevada) containing valuable tortoise habitat which would be subsequently managed for the benefit of the tortoise. The Applicant would review lands being considered for acquisition with the BLM, FWS, DFG, and the Nevada Department of Wildlife, to verify their suitability prior to acquisition.

#### 4.1.6.3 Bighorn Sheep

1. A commenter wrote:
  - "Bighorn sheep which frequent the area will have their habitat destroyed"
2. The Draft EIS/EIR (page 5.5-2) indicated that a population of about 15 bighorn sheep inhabit the northern Piute Range and Castle Mountains, over an estimated area of about 47 square miles (30,000 acres). Surface disturbances associated with the project would remove vegetation on 890 acres that could be used as bighorn forage (about three percent of the estimated forage area). While bighorn have been sighted on upper slopes of the site in the Castle Mountains, there is no indication that the site is a crucial habitat area. The project would not disturb areas frequented by bighorn.
3. Based upon this information, it was concluded in the Draft EIS/EIR that the project would not be expected to significantly affect the bighorn sheep. The DFG has previously reported that "undoubtedly most bighorn ranges supported two or three times the present number..." (DFG, 1982). Since the available habitat in the Castle Mountains and northern Piute Range is large in comparison to the bighorn population, it is not expected that habitat area is a limiting factor.

## 4.1.7 LAND USE

### 4.1.7.1 East Mojave National Scenic Area Compatibility

1. Many commenters expressed opinions indicating that the Castle Mountain Project (and/or mining in general) is not compatible with the EMNSA. As stated by one commenter:
  - "This massive level of development is *not* consistent with protecting the natural and scenic integrity of the East Mojave National Scenic Area."
  
2. The Draft EIS/EIR (page 4.10-7) discussed the management goals that were adopted in the EMNSA Management Plan (BLM, 1988a) "to direct future decisions for multiple use of the resources of the 1.5 million-acre Scenic Area:"
  - Make the region a demonstration showcase for multiple-use management.
  - Assure retention of the balance between use and natural values.
  - Provide for public enjoyment and understanding of the region, its history, and natural features.
  - Limit the region's development in the sense of more paved roads and large campgrounds on public lands; yet provide improved services and information, and enhance resource values by adding appropriate improvements, such as water.
  - Stabilize and, as appropriate, rehabilitate or recreate important historic structures.
  - Manage visitor uses in a manner that encourages dispersion so as to maintain the region's character and scenic values, as well as to protect resources.
  
3. The EMNSA Management Plan (page 97) states that, "Mineral development in the East Mojave is a long-standing activity that has helped to define the region's character. Modern technology and reclamation requirements can help maintain the balance between this use and other activities or resources in the Scenic Area". The EMNSA Plan recognizes that mineral development will occur within the Scenic Area. Specifically, the Plan states:
  - "Significant deposits of commercially valuable minerals or mineral materials are located in several areas of the East Mojave where other valuable resources occur, or other outstanding use opportunities exist. There is a need to strike a balance between the national need for minerals, industry concerns regarding an over-regulated working environment, legitimate resource values which conflict with mineral exploration and development activities, and the known high mineralization of the East Mojave region."
  - "The objectives necessary to resolve this issue are: . . . *Encourage mineral development* consistent with the principles developed in the National Mineral Policy and Development Act of 1970, and *in a manner to prevent unnecessary or undue degradation of public lands*" (EMNSA Plan, page 25, emphasis added).





- "(It is BLM's policy) to encourage and facilitate the development of domestic mineral resources to meet critical material needs" (EMNSA Plan, page 129).

Thus, the EMNSA Plan recognizes the known high mineralization of the east Mojave region and encourages mineral development as long as it is conducted in a manner to avoid unnecessary or undue degradation. The EMNSA Management Plan specifically identified the Castle Mountain Project as a scheduled new operation, and the Hart Mining District as an active mining area (see EMNSA Management Plan, page 128 and Map No. 3-4).

4. The Castle Mountain Project has been designed to be compatible with the character of the existing environment, in compliance with EMNSA Management Plan requirements. As explained in the Draft EIS/EIR (page 4.10-7) "Mining operations are to be designed to be as visually unobtrusive as best practices allow in order to help protect the scenic integrity of the EMNSA." It is evident that the project would be consistent with both the intent and requirements of the adopted management policies for the EMNSA.

#### 4.1.7.2 Proposed Mojave National Park

1. Legislation has been proposed to Congress that would make major changes in the CDCA Plan. The most widely publicized proposals (S.7, S.11, and H.R. 780) include creation of Mojave National Park. The proposed park would cover 1.5 million acres, and roughly coincide with the present EMNSA boundaries. Other legislative proposals for the CDCA have also been submitted to Congress.
2. Some reviewers of the Draft EIS/EIR and Supplement commented:
  - "It is inexcusable that the [Draft EIS/EIR] fails to discuss the impact of the Castle Mountain Project on that park proposal."
  - "The EMNSA is not just a scenic area, but a proposed national park. How can you justify an open pit heap leach gold mining operation in the middle of a national park?"
  - "The National Park Service has recognized the area as warranting national park status and protection, because of the many values in the area."
3. In the preparation of the Draft EIS/EIR for the proposed Castle Mountain Project, the BLM and County recognized that "S.7" (the proposed California Desert Protection Act) had been reintroduced to the 100th Congress as Senate Bill 11. Subsequent to publication of the Draft EIS/EIR, H.R. 780 was proposed. At this time, such legislation is considered to be in its



formative stage; in the event that legislation of some kind is enacted, its final form could be substantially different from that originally proposed. As such, there is no indication as to the specific effect of future legislation on the EMNSA. An attempt to address the Castle Mountain Project in this context would therefore be speculative. Such legislation would require a basic legislative change as compared to the current BLM management framework. The BLM will therefore continue to manage the EMNSA under the CDCA Plan and EMNSA Management Plan.

4. Prior to the publication of the Draft EIS/EIR, the National Park Service (NPS) responded to a request by Congressman Jerry Lewis to review S.7. The NPS responded that: "The existing mechanisms for modification embodied in the California Desert Conservation Area Plan do, indeed, provide the land use planning flexibility originally sought and envisioned by Congress . . . We also do not believe it is appropriate to designate the East Mojave as a national park . . ." (NPS, 1988).
5. The NPS has not indicated concerns or conflicts with potential future park designation in its review of the Castle Mountain Project Draft EIS/EIR (see Section 4.2.1.1, Letter 5: National Park Service, of this Final EIS/EIR).
6. The NPS recently responded to a request by Congressman Jerry Lewis to review H.R. 780, the proposed "California Desert Protection Act of 1989." In its response, the NPS stated:
  - "The National Park Service (NPS) and the Administration are strongly opposed to enactment of H.R. 780. The bill would, among other provisions, designate vast unsuitable areas of southern California as new wilderness, unnecessarily expand the National Park System, and require acquisition of expensive lands now owned by Indian allottees near Palm Springs. H.R. 780 would designate 4.5 million acres as wilderness, add 245,000 acres to the Joshua Tree National Monument, designate 1.5 million acres as a new Mojave National Park, and establish Death Valley and Joshua Tree National Monuments as National Parks."
  - "H.R. 780, if enacted, would override 13 years of work by citizens and interest groups who joined together in the belief that, by Congressional direction, they were given the responsibility to develop a Desert Plan which would provide balanced management for all resources within the Desert. The Desert Plan provides a process which allows for continued public input and dialogue on the Plan. This process has afforded the public an excellent opportunity to review planning decisions by which the Desert lands are managed and for what uses. H.R. 780 would ignore this process and instead propose boundary enlargement of NPS lands and adjustments to BLM lands that do not reflect sound on-the-ground management."



- "We understand that you are particularly concerned with section 401 through 406 of H.R. 780, which would establish the 1.5 million-acre Mojave National Park. This would require the transfer of 1.29 million acres of public lands from BLM to NPS and would abolish the present East Mojave National Scenic Area administered by BLM. We concurred in the scenic area designation because the area did not have the qualities needed to designate it as a national park and also because it contained many uses incompatible with a national park, such as interstate pipelines, power lines, and a railroad. Consequently, we object to a proposal for a major new national park that does not meet the standard established for new NPS areas."
- "The national park status H.R. 780 would give could result in considerable additional Federal costs with little real benefit to the resource" (NPS, 1990).

#### 4.1.8 SOCIOECONOMICS

1. The Draft EIS/EIR (Section 5.11, Socioeconomics) addressed the socioeconomic effects of the Castle Mountain Project in terms of its potential for creating a need for additional housing as a result of project employment and population growth. That analysis was prepared in compliance with NEPA and CEQA environmental regulations and guidelines and designed to assess potential secondary physical effects on the environment (such as from housing construction).
2. Some reviewers were interested in certain issues not subject to NEPA or CEQA review, since environmental regulations do not require discussion of purely legal or economic issues, such as the profits from mining. A common question in this regard was:
  - "What royalties will be paid to the United States for extraction of these non-renewable resources?"
3. Public domain minerals are managed according to their classification as leasable, saleable, or locatable, as follows:
  - **Leasable minerals**, which include oil and gas, geothermal, coal, potassium in all its forms, sodium, sulphur in Louisiana and New Mexico, phosphate, including associated and related minerals, asphalt (in Oklahoma), and gilsonite, including all vein-type solid hydrocarbons, are the only minerals for which the Federal government receives royalty and rental monies.
  - **Saleable minerals** are described as "common variety" sand, gravel, topsoil and building stone, and is directly sold (priced per cubic yard) by the authorized officer of the appropriate Federal agency (30 U.S.C. §611).

- **Locatable minerals** are all minerals other than those listed above. Under the 1872 Mining Law (30 U.S.C. §22 *et seq.*), "a person has a statutory right consistent with other laws and Departmental regulations, to go upon the open (unappropriated and unreserved) public lands for the purpose of mineral prospecting, exploration, development, and extraction." No royalties or rental monies accrue from use and exploitation of these claims. Profits realized from extracted minerals are taxed by the Federal and State governments. Precious metals, precious stones, strategic minerals, industrial minerals, and "uncommon varieties" of sand, gravel, topsoil, and building stone are all examples of locatable minerals.
4. A reason for the absence of royalty requirements on locatable minerals is that Congress has recognized that the extraction of minerals is an important part of the American economy, and for certain minerals, that extraction is best promoted through self-initiating procedures. Congress stated in the Mining and Minerals Policy Act of 1970 that "it is the continuing policy of the Federal Government in the national interest to foster and encourage private enterprise in: (1) the development of economically sound and stable domestic mining, minerals, metal and mineral reclamation industries, (2) the orderly and economic development of domestic mineral resources, reserves and reclamation of metals and minerals to help assure satisfaction of industrial, security and environmental needs, . . ." (30 U.S.C. §21(a)).
  5. Economic returns to the government are not isolated to a royalty interest. The government derives income from both income taxes as well as increased property taxes due to the increased value of the developed property. Mining also provides a source of income, employment, and a tax base for local economies in many communities throughout the United States. (BLM, undated).
  6. Other commenters raised questions surrounding legal mining issues, such as:
    - "Under the mining laws, a person has a statutory right, consistent with Department of Interior regulations, to go upon open Federal lands for the purpose of mineral prospecting, exploration, development, extraction, and other uses reasonably incident thereto . . . Is the Viceroy Gold Corporation, a subsidiary of B&B Mining Company of Canada, a 'person' in the above context?"
  7. Viceroy Gold Corporation is a wholly-owned subsidiary of Viceroy Resource Corporation of Vancouver, Canada. Viceroy Gold Corporation, the project Applicant, is incorporated in the State of Delaware, and is authorized to conduct business in California and Nevada. A corporation is legally considered to be a person.







## 4.2 RESPONSES TO AGENCIES

1. This section provides a detailed response to each Federal, State, or local agency that commented in writing on the Draft EIS/EIR and/or Supplement. Where comments or suggestions resulted in modifications to the project or alternative mitigation, those changes were reflected in Chapter 3.0. Comments from letters have been typed verbatim, unless otherwise indicated.





#### 4.2.1 DRAFT EIS/EIR RESPONSES







#### 4.2.1.1 FEDERAL AGENCIES

Letter 1: U.S. Department of Health and Human Services, Public Health Service

Letter 2: U.S. Department of the Interior, Bureau of Indian Affairs

Letter 3: U.S. Department of the Interior, Bureau of Mines

Letter 4: U.S. Department of the Interior, Fish and Wildlife Service

Letter 5: U.S. Department of the Interior, National Park Service

Letter 6: U.S. Environmental Protection Agency







LETTER 1: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES,  
PUBLIC HEALTH SERVICE

Comment 01

1. We have reviewed the Draft Environmental Impact Statement (DEIS) for "Castle Mountain Project, San Bernardino County, California." We are responding on behalf of the U.S. Public Health Service. We found the documentation for this project to be well done with a good analysis of potential impacts. We were particularly pleased to find sections of the DEIS entitled "Environmental Health and Safety" which were specifically devoted to assessing potential hazards to workers and the general public as a result of this project.

Response 01

1. Comment noted.

Comment 02

1. Our review did not reveal any extraordinary hazards to public health or safety posed by this project other than those inherent in a mining operation of this scope. As noted in the DEIS, the primary health concern is related to management of hazardous chemicals, particularly cyanide. In our review of proposed control practices, we feel this hazard is well mitigated. Since mining is a recognized high hazard activity, we wish to emphasize the need for strict compliance with Mine Safety and Health Administration (MSHA) regulations.

Response 02

1. Comment noted.

Comment 03

1. While MSHA requirements are frequently referenced in the DEIS, we feel that a comprehensive and continuous health and safety training program is essential to ensure consistently safe working conditions. Safe working practices can only result from such a training program supported by inspired management and supervisory practices. We recommend that the Final Environmental Impact Statement (FEIS) include details of the proposed plans for such training and management programs for this project.



Response 03

1. Comment noted. Environmental impact documents do not generally provide a detailed discussion of training and management programs required by MSHA. However, in an effort to be responsive, a discussion of some of the pertinent aspects of these programs is presented below:

- Supervisors will be required to perform a daily hazard inspection of their work areas. Unsafe conditions will be reported and remedied.
- Newly hired employees, prior to reporting to their work stations, will be required to attend MSHA training sessions. The sessions will include general discussions of health and safety issues associated with industrial operations, with particular emphasis on earth-moving, materials handling and storage, proper procedures for working with process reagents, instructions and familiarization with the operation of equipment at their work station, and first aid.
- Each employee will receive eight hours of refresher training annually.
- Each employee will receive personalized training from the responsible supervisor on the appropriate procedures and specific hazards associated with his/her duties.
- The supervisor and crew will hold a short safety session on the day a crew returns from scheduled time off, to reinforce the safety message.
- As is common at other safety-conscious operations, the Castle Mountain Project will have an employee safety incentive program to encourage employees to develop a "pro-active" attitude towards workplace health and safety practices.
- A hazards analysis will be written for each job function and reviewed and updated with the employee on a regular basis throughout the year.
- Chemical manufacturers, particularly for toxic chemicals such as cyanide, have comprehensive educational programs that are provided to their customers as part of their marketing services. These programs will be integrated into the overall safety program for the proposed project.

## LETTER 2: U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF INDIAN AFFAIRS

Comment 01

1. The Bureau of Indian Affairs Phoenix Area Office and our Colorado River Agency in Parker, Arizona, have reviewed the Castle Mountain Project Draft Environmental Impact Statement. This proposed mining project in San Bernardino County, California is not within our area of jurisdiction and will not affect Indian trust lands or resources. Native American socioculture values have been taken into full consideration and will not be diminished by implementing this project. Therefore, we have no further comments regarding the proposed project.

Response 01

1. Comment noted.



## LETTER 3: U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF MINES

Comment 01

1. The engineering for the operation appears to follow acceptable industry standards. Our primary concern is the wise use and conservation of mineral resources, including those that are not recovered by the planned operation. The DEIS adequately addresses this issue; specifically, nearby clay pits are avoided and current protore is to be stockpiled separately in the event it becomes economic to recover the contained gold in the future. The recognition in the report that backfilling the pit would have an adverse effect on access to potential future resources is also important. Finally, the mitigating factors planned by the company appear reasonable from an engineering standpoint.

Response 01

1. It should be noted that the Proposed Action does include reclamation at the nearby clay pits, which were developed prior to SMARA and would not otherwise be reclaimed. However, this reclamation is not expected to affect the use of those mineral resources because the clay product is not in high demand. The Applicant will excavate and stockpile about 12,000 tons of clay to satisfy future needs.
2. See Section 4.1.4 (Reclamation) of this Final EIS/EIR for an additional discussion of backfilling.



## LETTER 4: U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE

Comment 01

1. The Fish and Wildlife Service (Service) has reviewed the referenced document, which describes plans to develop a heap leach gold mining operation on approximately 910 acres of a 2,735 acre site in the Mojave Desert of eastern San Bernardino County. The proposed operation includes two mine pits, overburden piles, heap leach piles, cyanide ponds, a well-field, and ancillary roads and buildings.
2. The biological communities of the project area include creosote bush scrub, Joshua tree woodland, blackbush scrub, and grasslands. A perennial stream, fed by Piute Spring, supports a significant riparian community approximately 15 miles to the southeast of the proposed project. Wildlife species found in the area are those typical of desert scrub communities. No Federally listed threatened or endangered species occur onsite, but the desert tortoise (*Xerobates agassizii*), a candidate species for listing under the Federal Endangered Species Act, occurs at the mine site in low densities and along the proposed access roads in low to high densities.
3. In general, the Service is concerned with the incremental impacts to desert scrub habitat that the proposed project entails. Desert habitat, which may require much larger acreages to be biologically productive than other upland communities because of climatic extremes, is being rapidly fragmented. While the Castle Mountains Project itself will only affect a small portion of the Lanfair Valley, its indirect impacts will extend beyond the boundaries of the immediate disturbance. These impacts need to be considered cumulatively in light of other ongoing or planned gold mining activities, the proposed expansion of Fort Irwin, solar power development, urbanization, and other commercial and recreational uses.

Response 01

1. It is acknowledged that the Proposed Action will result in an incremental impact on the Mojave Desert scrub habitat. The Draft EIS/EIR, in its evaluation of this cumulative effect, focused on Lanfair Valley and nearby surrounding areas as the most likely region for potential cumulative effects to occur. Indirect and direct effects beyond the boundaries of the site were considered in conjunction with other land use activities such as utilities and services, commercial and residential use, mining, grazing, and recreation. It was determined that the Proposed Action would not contribute significant impacts on resource values as a result of the cumulative effects of these other activities. Other activities more remote from the project site



(such as the proposed expansion at Fort Irwin, solar power developments, and other commercial and recreational uses) have less potential for a significant cumulative effects and were not considered part of the region being analyzed for cumulative impacts.

#### Comment 02

1. An additional major concern of the Service is the assertion made in the draft environmental impact statement/draft environmental impact report (DEIS/DEIR) that water use at the mine will not adversely affect the riparian habitat at Piute Spring. The recharge rate that was calculated for the Lanfair Valley may well overestimate the amount of water that reaches the ground water table. Rainfall figures are based strictly on averages from different elevations taken from desert areas in the western United States. These include Nevada where greater percentages of the water associated with winter rainfall and snowfall are capable of soaking into the ground water table before being evaporated. The Castle Mountains, in the eastern portion of the Mojave Desert, can receive both winter and summer rains with the great yearly variation between events that is typical of desert weather. Therefore, the "conservative" approach claimed in the DEIS/DEIR with regard to recharge rates may not actually be that conservative, in that the low rates of recharge estimated for the Lanfair Valley may actually be even lower as noted above.

#### Response 02

1. The Draft EIS/EIR (page 5.3-5) included a calculation that did not consider recharge, demonstrating that no significant effect would occur to Piute Spring. It was recognized during the course of the recharge evaluation for the computer model, that some of the precipitation in this area occurs in summer months during which time effective recharge could be reduced. However, specific rainfall data from two local stations demonstrates that the summer precipitation is a relatively limited portion of the total (see Section 4.3.1.2, Letter 8.1: Sierra Club Legal Defense Fund/Curry). The recharge rate used in the evaluation for the Draft EIS/EIR is therefore believed to be conservative.

#### Comment 03

1. We understand that the U.S. Geological Survey, in 1984, released a report which described the Lanfair Valley/Piute Spring hydrologic regime as one where the recharge and outflow were approximately equal. If this is the case, water pressure changes brought about by the cone of depression formed under the well field may well result in the cessation of flows to the spring, even though the water table in the adjacent Lanfair Valley area may not be significantly lowered.

Response 03

1. The cited report, entitled *Ground Water Resources of Lanfair and Fenner Valleys and Vicinity, San Bernardino County, California* (USGS Water Resources Investigations Report 83-4082), was referenced in the Draft EIS/EIR and used as background information in preparing the analysis. That report did hypothesize that "... virtually no ground water is lost as underflow toward Fenner Valley. All the ground water is discharged at Piute Spring..." (USGS Report 83-4082, page 11). However, that report was prepared for purposes of establishing an inventory of ground water resources, and did not undertake the detailed evaluation of recharge and discharge that was completed for the Draft EIS/EIR. Contact with the author of the USGS report has indicated concurrence with the results of the Draft EIS/EIR analysis (Freiwald, 1989).

Comment 04

1. Finally, with regard to the potential effects on Piute Spring, the DEIS/DEIR calls for a yearly monitoring report to assess the effects of the pumping on the ground water table. This monitoring schedule is inadequate and could result in the cessation of flows to the spring and irreparable damage to the riparian habitat before remedial measures could be implemented. We strongly suggest a much more frequent monitoring program with stations able to detect water quality and quantity changes (including water pressures). These stations should be located in a manner that could detect any changes along the direction of ground water movement between the wells and Piute Spring.

Response 04

1. Based upon the Draft EIS/EIR recommendation for ground water monitoring, a ground water monitoring plan has been developed. The plan, which is available for public review and is also described in Section 4.1.5 (Water Resources) of this Final EIS/EIR, includes monthly monitoring intervals for wells drilled to monitor ground water fluctuations. The monitoring wells would be installed between the West Well Field and Piute Spring.

Comment 05

1. The DEIS/DEIR does not contain any attempt to provide for compensation for lost tortoise habitat. Tortoise habitat losses should be quantified and appropriate compensation measures devised prior to the issuance of a final EIS/EIR.



Response 05

1. The Draft EIS/EIR included mitigation measures designed to reduce potential impacts to the desert tortoise below a level of significance, in compliance with NEPA and CEQA requirements. Since the desert tortoise had not been listed as a threatened or endangered species at the time the Draft EIS/EIR was issued, and because the onsite areas used by the tortoise were considered marginal habitat, a compensation plan for habitat disturbance was not included. Subsequent to the Federal and State listing of the tortoise, in accordance with the Endangered Species Act (16 U.S.C. §1531 *et seq.*), a Biological Assessment was prepared for formal consultation with FWS. Compensation for desert tortoise habitat disturbed by the project was assessed in the Biological Assessment and will be required. *Note to Readers: FWS has since issued its Biological Opinion recommending such compensation (see Appendix G of this Final EIS/EIR for a copy of the FWS Biological Opinion).*

Comment 06

1. The Service recommends that the open pits be backfilled with overburden at the termination of the project or as the pits become depleted of ore. The Service's Reno, Nevada office has encountered adverse effects accruing to wildlife from the accumulation of rainwater in the bottom of these pits. Run-off which washes over rock surfaces which are normally not exposed to the surface can suspend chemicals that are deleterious to wildlife when concentrated in ponded rainfall.

Response 06

1. As explained in of the Draft EIS/EIR (pages 5.3-1 and 5.3-2), "samples of ore, protore, and overburden from the Castle Mountain Project site have been subjected to geochemical testing to determine the acid generation potential and extractable metals." The results (Table 5.3.1, Summary of Results, Analysis of Ore, Protore, and Overburden) indicate that the measured concentration of metals frequently associated with gold ore are relatively low in relation to concentrations considered to be of potential concern by the State. Further, there are virtually no residual sulfides in the Castle Mountain Project gold ore body. Based upon this analytical data, it is expected that ponded water which may accumulate in the pits would not be deleterious to wildlife.

Comment 07

1. Discussions of the impacts of the natural gas pipeline from Searchlight to the mine site are inadequate. Installation of such a line would likely result in the creation of a road through an area that currently is roadless, even if the Searchlight Access Route is not developed. This

## Fish and Wildlife Service

improved access will undoubtedly be used by the public and result in further habitat degradation. Therefore, the Service recommends that the Ivanpah Valley route be used for both traffic and gas lines. The installation of a tortoise-proof fence along this road and a mandatory employee bussing program should greatly offset the impacts of the increased traffic along this existing road.

Response 07

1. The Draft EIS/EIR (Section 3.2.5.2, Power Requirements and Supply and Figure 3.2.9, Preliminary Utilities Plan) explains that the natural gas pipeline would be constructed within the alignment of the Searchlight Access Route. This alignment was selected so that additional land disturbance would not be necessary.
2. The Draft EIS/EIR recommended construction of tortoise-proof fencing along access roads through crucial desert tortoise habitat. However, based upon public concerns expressed regarding traffic impacts to the tortoise in response to the Draft EIS/EIR, the plans for access alignment were changed, as described in the Supplement (Section 3.2.1, Mitigated Searchlight Access Route). The mitigated access alignment would avoid crucial (Category 1) desert tortoise habitat, and tortoise-proof fencing would not be necessary. A voluntary program of busing/van-pooling would still be provided by the Applicant.
3. *Note to Readers: FWS has since issued its Biological Opinion approving use of the Mitigated Access Route, without fencing.*

Comment 08

1. *Water Requirements and Supply, pages 3.2-23 and -24.* Projected water use for the summer months is 495 gallons per minute (gpm), while the DEIS/DEIR uses an average consumption figure of 450 gpm for its annual average. Given that water availability at Piute Spring would be most critical in the summer months, it may be more appropriate (and a more conservative approach) to base water use (and thus anticipated impacts) on the summer figure rather than an annual average.

Response 08

1. The water resources analysis for the Draft EIS/EIR was completed to determine if the Proposed Action ground water withdrawals would have any impact on Piute Spring flows. Since the analysis, as presented in Draft EIS/EIR (Section 5.3, Water Resources), concluded that no potential reduction in flows would occur, seasonality is not considered an issue.



Comment 09

1. Initial surface disturbances at well-sites are estimated to be 100 by 100 feet in area, with reclamation occurring in the area outside of a 25 by 25 foot area of permanent disturbance. We recommend that the vegetation within the temporary disturbance area be crushed rather than bulldozed. This method of clearing should hasten revegetation.

Response 09

1. Comment noted. A mitigation measure has been added to limit vegetation disturbance for temporary access and well construction by crushing, instead of bulldozing the vegetation (see Section 3.2.1, Additional Mitigation Measures, of this Final EIS/EIR).

Comment 10

1. *Project Traffic, page 3.2-34.* It is unclear from the discussion contained in the DEIS/DEIR whether participation in the bus or van pool for employees will be mandatory. The Service strongly recommends that this be a condition of project approval. This program would not only reduce the number of vehicle trips, thereby reducing vehicle-wildlife collisions, but would also allow for stricter control of speed limits and eliminate most opportunities for employees to collect wildlife, such as the tortoise.

Response 10

1. As explained in Response No. 07, employee participation in the program for busing/van pooling is planned to be voluntary. This service could not be conveniently provided from every location where employees may live and, since overall project traffic would be very low, occasional individual vehicle trips would not be expected to substantially increase potential wildlife impacts. Bus/van pooling is planned to be provided from the Las Vegas area where the majority of employees are expected to live. The convenience and cost savings associated with use of such services has resulted in a high employee participation (over 80 percent) at other mines.
2. Adherence to posted speed limits, and policies and laws restricting wildlife collection, especially the desert tortoise, are subjects that would be addressed in the employee education program (see Draft EIS/EIR, page 6.5-2). Experience with the general public and at other mines has shown that education oriented toward an understanding and appreciation for local wildlife is one of the best tools for its protection.

Comment 11

1. *Revegetation, pages 3.2-49 and -50.* The Service recommends that the Bureau of Land Management (BLM) and the Applicant select a qualified arid lands revegetation specialist and contract with this person prior to the publication of the FEIS/FEIR. This will permit a more detailed revegetation proposal to be presented in the final environmental document, which the Service also believes will be an important means of attempting to mitigate the adverse impacts of the proposed project. This plan should contain the goals of the revegetation effort and the means that would be implemented to correct any failures of the initial efforts.

Response 11

1. The Draft EIS/EIR (page 3.2-47) explains that a consulting expert, with qualifications in desert flora acceptable to BLM, would be selected to implement the revegetation program. It is not expected that a particular consultant for the entire program would be selected until a decision on the project is made. However it should be noted that the California State University Desert Studies Consortium, has been contracted by the Applicant to collect baseline data and to establish the framework for the revegetation program.
2. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR for a discussion of revegetation goals.

Comment 12

1. Because restoration of habitat values will be a slow process that will not begin until sometime after the initiation of mining, we recommend that the BLM select disturbed sites in the project vicinity and begin revegetation efforts on these sites concurrently with the onset of mining. The Service recommends that the Applicant initiate these efforts on an area equal to the size of the area that will eventually be disturbed by mining operations. This measure would result in at least some offsetting of the temporal losses of habitat value, as well as allowing an early testing of methods to be used later in the reclamation phase.

Response 12

1. Reclamation and revegetation procedures will be employed in areas that were disturbed by previous activities partially to offset project effects. Reclamation of the South Clay pit, which covers about 60 acres, will begin at project initiation. The Applicant has recently purchased the North Clay pit. This acquisition would allow the Applicant to integrate this area into the overall reclamation activities for the project. Reclamation of other areas disturbed by the project would occur concurrently with operations. For example, reclamation of a portion of



the south overburden pile would be initiated about three years following project initiation. Project plans for disturbance and reclamation have been phased to minimize the duration of habitat disruption. However, it was recognized in the Draft EIS/EIR (Section 5.5, Wildlife) that the project would affect desert wildlife habitat, and that an extended period for vegetation recovery is expected. Vegetation test plots would be established at an early date, to gather information on appropriate revegetation procedures.

#### Comment 13

1. The Service believes that efforts should be made to transplant all barrel cacti and Joshua trees that will be disturbed. Likely candidate sites would be the previously disturbed areas mentioned in the preceding paragraph and the cleared zones around the water wells. This recommendation, if implemented, would more quickly replace habitat values, as the larger Joshua trees provide greater habitat values and, because of the slow growth rates of this species, the value of the transplanted smaller trees would not be realized for many years.

#### Response 13

1. The intent of the revegetation program is to transplant as many barrel cacti and Joshua trees as is reasonably feasible. The Draft EIS/EIR suggested that a minimum of at least 25 percent of these plants be transplanted, recognizing that many factors affect transplanting survival. For example, individual plants in certain size classes are known to have a poor rate of transplant survival, and attempts to recover cactus and other plants growing on rocky slopes with little substrata often damage the root systems beyond recovery. Moreover, the logistics of recovering plants distributed over many acres and extended storage times in nursery areas will require discretion in selecting healthy individual plants for transplanting. Based upon these considerations, it is believed appropriate to determine from onsite experience with plant survivability how many plants can be feasibly transplanted. Joshua trees ranging in size from 3 to 10 feet, unbranched or with few branches, are suspected to have the highest degree of transplant success and are recommended to be used in the reclamation plan (Viceroy, 1990).

#### Comment 14

1. Recent work on revegetation of desert lands has indicated that fertilization can result primarily in the production of weedy species. It may be more valuable to provide the revegetated stock with inoculations of appropriate microflora to promote growth. Again, the expertise of one experienced in revegetation of desert habitat types is needed.

Response 14

1. Comment noted. The appropriateness of using fertilizers to promote plant growth will be assessed further as part of the revegetation research program. Other forms of soil amendments will also be tested.

Comment 15

1. *Bonding, page 3.2-54.* The footnote on this page [3.2-54] indicates that revegetation efforts would be "completed as determined feasible." This statement seems to indicate that there is some doubt that revegetation efforts can be successful. However, the findings of non-significance in relation to vegetation impacts are based at least in part on the ability of the Applicant to restore the project area. Therefore, the findings of non-significance should either be revised or the environmental documents should be revised to guarantee the success of the restoration efforts.

Response 15

1. The referenced footnote refers to the cost estimates which must be included in bonding calculations for "re-seeding, watering, and fertilizing." This statement was not intended to question the ultimate success of revegetation, only to explain that bonding amounts for these revegetation activities would be reasonably assessed based upon the need and success of each activity as determined through onsite studies.
2. It should also be noted that the findings of non-significance for vegetation impacts are not based upon the ability of the Applicant to "restore" the project area. As stated on Draft EIS/EIR (page 5.4-1):

"Impacts to vegetation would be considered potentially significant if they could:

- Substantially affect a threatened or endangered species or its habitat.
- Substantially diminish habitat for a plant species."

The Draft EIS/EIR determination of non-significance for project impacts on vegetation was therefore based on the evaluations that demonstrated these criteria would not be exceeded.

Comment 16

1. *Water Resources, Proposed Action, page 5.3-1.* This portion of the DEIS/DEIR indicates that an impact to the riparian habitat at Piute Spring would be considered significant only if that habitat was to be "substantially affected or destroyed" by reduced flow conditions. The Service strongly disagrees with this criterion as an indicator of significance. Riparian



communities in California are extremely high in wildlife values. Because of the very arid nature of the surrounding scrub communities, their value increases even more in the desert. Therefore, any action which could result in any reduction in these values should be avoided. We also believe that the BLM's policies of avoiding the long- and short-term impacts associated with the destruction, loss, or degradation of wetland riparian areas (BLM Manual 6740 - Wetland and Riparian Area Protection and Management) would preclude the establishment of significance levels for impacts in the DEIS/DEIR that would permit any degradation of the values at Piute Spring. The DEIS/DEIR should be revised to indicate that no adverse effect on the riparian and wildlife values at the spring will be permitted.

#### Response 16

1. Comment noted. We concur with the objective that no adverse effect to the Piute Spring riparian or wildlife values should be permitted. The purpose of the wording in the cited Piute Spring impact criteria was to link spring flow effects to wildlife habitat. Since Piute Spring surface water often flows beyond the riparian community, a limited reduction in flow may not noticeably alter the riparian habitat. However, a reduction in spring flow resulting in an effect to the riparian community would be unacceptable. The water resources investigation concluded that the Proposed Action ground water withdrawals would not affect spring flow. Thus, the riparian and wildlife values associated with Piute Spring would not be affected, and the objective would be satisfied.

#### Comment 17

1. *Wildlife, page 5.5-1.* This section identifies potentially significant impacts to wildlife as being those which "(s)ubstantially affect a threatened or endangered species." Although no Federally listed species occur within the proposed project area, the preparers of the DEIS/DEIR, as well as the BLM, should be aware that the Federal Endangered Species Act does not permit adverse effect to accrue to a listed species without completion of formal Section 7 consultation. Section 7 consultation is likely to result in the development of measures to avoid impacts to the species and its habitat, and to reduce the take of individuals. Should jeopardy to the species be possible, reasonable and prudent alternatives would be provided.

Response 17

1. Comment noted. The status of the desert tortoise has subsequently been changed in the Final Determination to threatened. A Biological Assessment has been prepared and formal consultation with FWS has been completed, pursuant to Section 7 of the Endangered Species Act (16 U.S.C. § 1536).
2. *Note to Readers: FWS has determined in its Biological Opinion that no jeopardy to the continued existence of the desert tortoise would occur as a result of Castle Mountain Project activities.*

Comment 18

1. *Cyanide Solution, pages 5.5-6 and -7.* Although large animals will be effectively excluded from the cyanide ponds, chain link fencing will be unable to prevent the access of many species of birds to this water source. Therefore, the use of hardware cloth or sheet metal at ground level should be combined with a closer spaced (0.5 inch or less) wire screen fencing in place of the chain link fence to prevent small birds from entering the heap leach areas. We also encourage the use of similar material to cover the tops of the ponds. This would eliminate the use of netting, in which birds and bats could become entangled.

Response 18

1. The Draft EIS/EIR mitigation for protection of wildlife from cyanide ponds included netting that would be designed to be small enough to discourage bird entry or entanglement. However, a different storage system has subsequently been adopted, as discussed in the Supplement, (Section 3.2.2, Solution Storage) using steel tanks to hold the cyanide solution. Use of netting will therefore be limited to the emergency storage basin. This design will also provide for the exclusion of wildlife.

Comment 19

1. The use of a drip system on the top of the leach pile should aid in reducing the amount of water needed and in the elimination of ponding that could lead to wildlife deaths. However, a sprinkler system is still proposed for use on the sides of the pile. The Service believes that use of a drip system on the sides would further reduce water needs and the potential for ponding, and strongly suggests that this method be adopted.



Response 19

1. Comment noted. Plans for sprinkler irrigation were eliminated, as stated in the Supplement (Section 3.2.2, Solution Storage).

Comment 20

1. We wish to remind the BLM and the Applicant that the Federal Migratory Bird Treaty Act provides protection to most of the wild birds in the United States and virtually all of the species which could be expected at the project site. It is a violation of this Act to harm or kill, intentionally or not, any of these species. Because of this, the Service believes that the utmost care must be taken to prevent wildlife access to any toxic substances which may occur onsite.

Response 20

1. The Applicant will be required to comply with pertinent Federal and State laws, including the Migratory Bird Treaty Act of 1918 (MBTA). The Draft EIS/EIR (pages 6.5-2 and 6.5-3) describes measures designed to isolate cyanide processing solutions from wildlife that include: fencing, netting, drip irrigation, and solution piping. In addition, the Supplement further describes the concept of solution storage in tanks which has been incorporated into the project design (Section 3.2.2, Solution Storage). It is expected that these physical isolation measures will be adequate to enable the project operations to satisfy the requirements of the MBTA (16 U.S.C. § 703 *et seq.*).

Comment 21

1. The Pautuxet Wildlife Research Center of the Service is in the process of evaluating the impacts of heap leach operations on native wildlife. We encourage the BLM and the Applicant to participate in this research effort by submitting the final designs of the cyanide operation and its fencing system, as well as records of wildlife kills and any dead animals, to: Don Clark, Pautuxet (*sic*, Patuxent) Wildlife Research Center, Laurel, Maryland 20708 FTS . 956-7262 or (301) 498-0262.

Response 21

1. The BLM requires monthly reports from mining operators on wildlife, including any wildlife deaths attributable to mining and processing activities. The Castle Mountain Project will be required to comply with these reporting procedures. Further, a program of mitigation monitoring and reporting to the BLM and County has been developed for this project (see

Supplement, Chapter 6.0, Draft Mitigation Compliance Program). Data gathered on the measures designed to protect wildlife will therefore be regularly reported to the BLM and County, and available to the public and other agencies upon request.

2. Final design plans for the containment of cyanide solutions and wildlife exclusion would be completed and available for public review from the RWQCB following BLM and County decisions on the project.

#### Comment 22

1. *Traffic, page 5.5-11.* The Service disagrees with the statement made on this page that the cost of fencing to keep tortoises off the access roads could be redirected towards other measures that would enhance tortoise habitat. The DEIS/DEIR correctly indicates that roads have been identified as a steady drain on the tortoise populations located adjacent to them and that the increased traffic due to the project could result in a further drain in this area. Therefore, the impact of traffic on the tortoise is a direct result of the project and should be mitigated as such. Tortoise-proof fencing through tortoise habitat is a very appropriate measure to attempt to offset this impact and should be implemented, if combined with culvert crossings to prevent fragmentation of habitat.

#### Response 22

1. Considerations for use of desert tortoise fencing have been revised, as discussed in the Supplement. As a result of public comments received on the Draft EIS/EIR, the access route plans were revised to avoid traffic through Category 1 habitat. The Draft EIS/EIR mitigation measure for desert tortoise fencing along the access road was therefore deleted (see Supplement, page 3-21).

#### Comment 23

1. Construction of the tortoise-proof fences should extend for a distance or be anchored to a topographic feature that would eliminate the potential for tortoises to walk around the end of the fence and be trapped on the road. The fence design and extent should be fully developed through discussions with the BLM, the Service, and the California Department of Fish and Game (Department) prior to the publication of the FEIS/FEIR and the details of the design should be included in that document.

#### Response 23

1. See Response No. 22.





2. A preliminary perimeter fencing plan to exclude tortoises from the project site has been required by FWS and adopted as part of the Proposed Action. The fencing plan is shown in Figure 3.1 of this Final EIS/EIR.

Comment 24

1. *Regulatory Framework, pages 6.3-1 and -2.* The Applicant and the BLM should be aware that the discharge of fill materials into waters of the United States is regulated under Section 404 of the Clean Water Act. The Applicant should contact the U.S. Army Corps of Engineers at the following address to determine whether the work projected to occur within the site's washes is regulated: U.S. Army Corps of Engineers, P.O. Box 2711, Los Angeles, California 90053, Attn: Regulatory Branch (213) 894-5606.

Response 24

1. Comment noted. The Draft EIS/EIR (page 6.3-1) indicates that the project must comply with requirements of the Clean Water Act (33 U.S.C. § 1251 *et seq.*).

Comment 25

1. *Vegetation, page 6.4-3.* The Service recommends that livestock be excluded from all revegetation areas until the termination of the project and the maturation of the revegetated plants.

Response 25

1. Comment noted. A mitigation measure has been added that includes provisions for excluding of livestock from revegetation areas, as necessary to protect seedlings.

Comment 26

1. *Wildlife, pages 6.5-3 to -5.* The Applicant should be required to provide a tortoise-proof fence around the perimeter of the project site to prevent any removed tortoises from returning to the mine area.

Response 26

1. See Response No. 23.

Comment 27

1. The Service believes that the bird most likely to use the "raptor" ledges to be developed on the sides of the mine pits are ravens. Because the Service, the BLM, and the Department are undertaking measures to reduce raven production in the desert, developing additional breeding sites for this species is inappropriate.

Response 27

1. Comment noted. The Draft EIS/EIR provision for raptor ledges on the pit walls has been deleted. See Section 3.2.1 (Additional Mitigation Measures) of this Final EIS/EIR for final mitigation measures. However, natural depressions in the rock on the walls of the pits will remain as habitat for bats and smaller nesting birds.

Comment 28

1. In conclusion, the Service is concerned with the incremental loss of desert scrub habitats, continued fragmentation of tortoise habitat, potential impacts to a significant desert riparian area, and the very dubious potential of restoring the vegetation on over 900 acres of desert habitat. We are unaware of a single case where successful revegetation efforts have succeeded in restoring valuable wildlife habitat in a reasonable time frame. Additionally, the DEIS/DEIR makes continued references to operations continuing beyond the projected ten year life of the mine, should better technology become available that would enable the profitable extraction of more gold and silver. For these reasons, the Service believes that the subject operation will result in unnecessary and undue degradation of public lands and the wildlife values found on these lands. The proposed operation will not only result in a significant decrease in the local wildlife values, but will greatly impair the public enjoyment of these values.
2. As is stated on page 2.2-1 of the DEIS/DEIR, the "BLM is required to approve any operations as long as such operations will not cause unnecessary or undue degradation to public lands." The Castle Mountain Project, as currently proposed, will result in severe degradation and should not be approved by the BLM.

Response 28

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR regarding revegetation potential.





2. *Note to Readers: Since the issuance of this comment letter, the BLM has entered into formal Section 7 consultation with FWS with regard to the potential impacts of the Castle Mountain Project on wildlife. The FWS has issued its opinion concluding that the project would not jeopardize the tortoise. This Biological Opinion can be found in Appendix G.*

## LETTER 5: U.S. DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE

Comment 01

1. We have reviewed the subject environmental statement and have no comments on either the content of the statement or the proposal. We appreciate the opportunity to review the document.

Response 01

1. Comment noted.





## LETTER 6: U.S. ENVIRONMENTAL PROTECTION AGENCY

Comment 01

1. *General Comments* - While the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) has taken care to focus on a preferred alternative which it represents as an optimal combination of considerations (page 3.1-1), documentation is not of sufficient detail to warrant this conclusion. For example, impacts associated with project siting and design under the Proposed Action and other alternatives need amplification. Reduction of air quality and water quality impacts should be approached through alternatives which include scaling down the size and/or rate of development. Mitigation plans referenced in the DEIS/EIR should identify the parties responsible for implementation and enforcement, funding sources, and mitigation schedule. These points are explained more completely in the following comments.

Response 01

1. A Supplement to the Draft EIS/EIR was circulated in January, 1990, that included a discussion of alternate project location considerations, alternate project sizes, and alternate ore processing rates, as suggested by the Commenter.
2. The parties responsible for implementation and enforcement of mitigation measures and funding sources were described in the Supplement (Appendix E, Draft Mitigation Compliance Program). A specific schedule for mitigation measure implementation is to be included as part of the final MCP.

Comment 02

1. *Water Quality* - The DEIS/EIR should delineate more clearly the drainage system within the project area and the placement of mining activities with respect to this drainage, so that it is possible to evaluate the relative merits of recommended mine facility siting. The DEIS/EIR asserts that the "large natural drainage channel" onsite will not be disturbed (page 3.3-7); that the siting of the overburden has been done with consideration of "requirements to control upstream and downstream drainage" (page 3.2-15); and that the leach pads are located astride the drainage but "well above the depth of flood waters which occasionally flow in the large natural drainage channel traversing the area" (page 3.3-7). The DEIS/EIR should provide a map of 50- and 100-year flood levels for the drainage channel(s) on the site and identify whether any mining activities fall within these zones.

## Environmental Protection Agency

Response 02

1. A map delineating 100-year flood levels is provided in Section 4.1.5 (Water Resources) of this Final EIS/EIR document. As indicated on the map, mining activities would not be conducted within a 50 or 100-year flood zone.

Comment 03

1. The DEIS/EIR asserts that "ponds would be designed with sufficient capacity to accommodate large rainfalls" (page 3.2-18). Identify the maximum size storm event which the containment system is designed to handle and how often that size storm event is likely to occur. Identify where waters from the ponds and/or collection system would flow in the event of an overflow or accidental spill.

Response 03

1. Conceptual drawings for the solution storage ponds and the current preferred design concept for solution storage tanks were shown in the Supplement (Figures 3.7, Solution Storage Ponds Conceptual Drawing, and 3.8, Solution Storage Tanks Conceptual Drawing). In the event of an overflow or accidental spill, the solution would be held in the "solution storage area." In the event that additional flow from rainfall occurs, it would be stored in the "stormwater basin."
2. As indicated in the Supplement (page 3-24), the system storage capacity is dictated by the RWQCB. The system must be designed to contain stormwater run-off from the heap leach piles, cyanide solution collection, transport, and storage facilities during a Probable Maximum Precipitation (PMP) event and 24 hours of solution draindown from the heap leach piles. A PMP event at this site is defined as 4.61 inches of precipitation over a one hour period. There is no return period associated with a PMP event. The draindown was calculated using the Hydrologic Evaluation of Landfill Performance (HELP) model, developed by EPA.

Comment 04

1. The DEIS/EIR indicates intent to develop a plan to handle emergencies (page 1.1-11). Discuss how accidental releases of hazardous materials, including overflow from the ponds, will be handled. Identify the potential impacts resulting from failure of components of the solution containment system, and the degree to which the impacts would be reversible.



Response 04

1. The Draft EIS/EIR (page 3.2-29) stated that tanks for fuels and oils would be installed on prepared foundations enclosed with berms adequate to contain the contents of the tanks in the event of a leak or rupture, as determined by the County Department of Environmental Health Services. Where appropriate, storage facilities for reagents would also include secondary containment for spills. Areas where hazardous liquids are used or stored would be curbed or diked to contain potential spills and provide separation (Draft EIS/EIR page 3.2-21).
2. As stated in the Draft EIS/EIR (page 3.2-33), a spill prevention and preparedness plan would be prepared and submitted to the BLM and County. This plan would provide detailed procedures on spill prevention and containment of chemicals and hazardous substances used for the Proposed Action.
3. RWQCB design criteria for the solution containment system requires that they shall contain the PMP event, plus the 24-hour draindown volume from the heap leach piles, and have two feet of freeboard remaining in the basins. The freeboard is equivalent to the run-off from an additional 1.4 inches of rain over the entire area.
4. In the very unlikely event that more than six inches of rain over the entire area coincided with a 24-hour draindown of the heap leach piles, the excess solution would overtop the stormwater basin and flow down a small dry wash on the south side of the basin.
5. Cyanide dissolved in water is a very reactive compound, which decomposes rapidly when exposed to sunlight and aeration. Breakdown of the chemical is accelerated by the addition of strong oxidants, such as hydrogen peroxide. Should a spill occur, any pools of dilute cyanide solution would be neutralized by adding an oxidizing agent. Samples of contaminated soil would be analyzed and appropriate treatment procedures would be applied if the analysis indicated anything more intensive than sunlight and aeration was needed to reduce residual cyanide concentrations in the soil to levels acceptable to the BLM, County, and RWQCB.

Comment 05

1. While acknowledging the uniqueness of Piute Spring, the DEIS/EIR is scanty on resource values in this area (page 4.3-19). The document should identify the designated beneficial uses of Piute Spring. With regard to compliance with the Clean Water Act, NPDES permitting

requires that water quality standards be met for any designated beneficial use, not merely drinking water standards mentioned on page 2.4-7. Water quality standards to protect aquatic life may be more exacting than drinking water standards.

#### Response 05

1. The water resources analysis completed for the Draft EIS/EIR (Sections 4.3 and 5.3, Water Resources) determined that the project would not have the potential to affect Piute Spring which is about 16 miles from the West Well Field. Therefore Piute Spring was not within the "affected environment" as envisioned by NEPA or CEQA and a detailed discussion of the resource values of the spring area was not considered necessary in the Draft EIS/EIR.
2. The primary beneficial use of Piute Spring water is for vegetation, wildlife habitat, and livestock.

#### Comment 06

1. The DEIS/EIR briefly mentions use of ground water monitoring during operations "to detect potential release of solution from [the] containment system" (page 1.1-10). Explain in greater detail how contamination of surface and ground waters by cyanide and toxic metals will be avoided through monitoring. What provisions will be made for post-operation surveillance to ensure that neutralization of heap piles and solution pond sites has been effective? Explain what mitigation actions will be taken should contamination be detected.

#### Response 06

1. No toxic metals would be present in the processing solutions. As explained in the Draft EIS/EIR (pages 5.3-1 and 5.3-2) samples of ore, protore, and overburden subjected to extractable metals testing has determined that metals concentrations are below the Soluble Threshold Limit Concentrations for hazardous waste. No potential for toxic metals contamination of surface or ground waters is therefore expected.
2. Monitoring for potential contamination of ground water is regulated by CCR Title 23, Subchapter 15. A system for ground water monitoring will be constructed for this project and include:
  - The heap leach pads designed with a network of 2-inch perforated piping beneath the liner. The piping would be located within the natural drainages of the pad, to monitor the vadose zone.



- The emergency solution storage and stormwater basins designed with a sump arrangement between the two liners including an 8-inch pipe for accessing the sump installed in each basin. A submersible pump could be lowered to each sump to extract any fluids that collect in the sump.
3. As discussed in the Draft EIS/EIR (page 5.7-2), after final leaching, the heap pile would be decommissioned according to BLM and RWQCB procedures. The heap pile would be rinsed to reduce the residual cyanide content to a level stipulated by the RWQCB (usually to drinking water standards of 0.02 mg/l), using fresh water or neutralizing solution. Once the heap pile cyanide content has been reduced to this acceptable level, no future "post-operation surveillance" would be necessary to confirm effective cyanide neutralization, since this reaction is not reversible.
  4. Should monitoring determine a leak has occurred that could potentially cause ground water contamination, the RWQCB would determine the specific mitigation actions based upon the degree and extent of contamination and site specific conditions, such as geology and depth to ground water. Typical actions could include determining the point source and controlling the leak, intercepting the leaking solution and removing and decontaminating the soil.

#### Comment 07

1. *Ground Water* - Because of potential effects on the ecology of Piute Spring, ground water pumping has been a particular point of controversy for the Castle Mountain Project. While we recognize that projected water use has been scaled down substantially from the earlier Castle Mountain Project proposal (page 3.2-23), we have several concerns regarding the revised water use estimates for the project. Generally, we recommend a more thorough statement of assumptions underlying the revised estimates, and more detailed mitigation measures to protect area ecology should estimated water use and related impacts be understated. The water requirements of the project will vary with the scale of ore processing, subsequent neutralizing and decommissioning of the tailings, and reclamation. The water use estimates in the DEIS/EIR assume processing of three tons (*sic*) of ore per year over a ten year period (page 1.1-4). However, this is not a certainty: with the set-aside of lower grade protore and continuing exploration activities there remains a reasonable possibility that development of additional commercial grade deposits may occur. In this case, water demands could exceed the estimates in the DEIS/EIR.

Response 07

1. The estimate of a total 30 million tons of ore processed during the projected life of the Castle Mountain Project includes processing the lower grade protore (see Draft EIS/EIR Table 3.2.1, Estimated Mine Pit Characteristics). Projected water use was based upon this processing requirement.
2. Anticipated water use, as shown in the Draft EIS/EIR (page 3.2-23) consisted of:

<u>Water Use</u>	<u>Quantity (gpm)</u>	
	<u>Summer</u>	<u>Winter</u>
• Moisture retained in heap piles	175	175
• Evaporation loss:		
- Heap piles	160	95
- Solution ponds	10	5
• Dust Control	100	65
• Miscellaneous, including domestic, equipment washdown, etc.	<u>50</u>	<u>50</u>
TOTALS:	495	390
ANNUAL AVERAGE:	450 gpm	

As stated in the Draft EIS/EIR, these figures were derived from actual consumption figures obtained from similar operations. Moisture retention is based on increasing the moisture content of the ore by 13 percent, assuming a production rate of 8,000 tons of ore per day. Evaporation loss is based on an assumption of a five percent loss in the summer, three percent in the winter, and circulation of 3,000 gallons of solution per minute. Dust control is based on daily application during the summer and winter, respectively, of approximately 144,000 gallons and 94,000 gallons, on roads and at material transfer points.

3. Should a proposal be developed to mine additional ore onsite, or should additional deposits be discovered, water demands for the project would need to be developed and the potential effect on ground water evaluated. Environmental evaluation of such subsequent mining impacts would be required to consider the cumulative effects on ground water withdrawals together with the Castle Mountain Project effects. Since the amount of water use and timing of future ore processing cannot be reasonably foreseen at this time, potential water demands can not be estimated. The potential for future mining was discussed in the Supplement (Sections 5.2, Future Project Expansion/Modification, 5.3, Project Operation Beyond 10 years, and 5.4, Forecasting of Future Mines Based on Exploration).



Comment 08

1. Moreover, it is not clear whether several water-using components of the project have been adequately accounted in the estimate of water demand (page 3.2-23):
  - What amount of water was included for neutralizing and decommissioning leach piles?
  - What was the water allotment for the reclamation plan? Since revegetation of portions of the site is one of the reclamation objectives, irrigation of these areas may be required initially.

Response 08

1. Water needed for neutralizing and decommissioning of heap leach piles is included in the 725 acre-feet estimate of annual processing requirements. Since rinse water from a decommissioned portion of a heap pile would be recycled to an active heap, additional water for decommissioning activities would not be required, except for decommissioning the last heap. The amount of water required for the last heap will be quite modest, since the rinse water will be repeatedly recirculated through the pile, not only to flush out the residual cyanide, but to also allow the volume of rinse solution to be reduced by evaporation.
2. Irrigation water for revegetation is not expected to be a significant portion of total water use. Since heavily irrigated desert plants respond negatively when irrigation ceases, use of water in revegetation would primarily be for the nursery, plus a limited time following transplanting and seeding. Where possible, plantings and transplantings would be appropriately scheduled to coincide with seasonal precipitation. Average annual precipitation at the site is about nine inches. Assuming the plantings are supplemented with an additional 50 percent of average precipitation, the annual water use for irrigation would total about 28 acre-feet<sup>(1)</sup> or 3.8 percent of project water used.

Comment 09

1. Although the model of potential impacts of ground water withdrawals suggests that depletion of the Lanfair Valley Aquifer will not affect Piute Spring, some uncertainty remains regarding this conclusion (page 1.1-10). This uncertainty is all the more unsettling because several years may elapse between water withdrawals and observed effects on the spring. "Reevaluation" of the hydrological model in the event of drawdown at monitoring wells in excess of the estimated 60 feet (page 1.1-10) is not in itself sufficient mitigation to protect Piute Spring.

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<sup>(1)</sup> This calculation is based upon an average annual reclamation of 75 acres.

2. The DEIS/EIR should identify the minimum flow in Piute Spring needed to protect designated beneficial uses and riparian habitat. Additionally, the DEIS/EIR should describe mitigation measures to reduce the rate of ground water withdrawals if monitoring of the ground water table suggests that predicted impacts of withdrawals are understated. The discussion of mitigation should include water conservation and adjustment of the scale and timing of mining operations.

#### Response 09

1. Surface flow near the initial Piute Spring outlet averages about 40 gpm, while flow downstream is extremely variable and has been measured between 21 gpm and 135 gpm (see Draft EIS/EIR Table 4.3.1, Piute Spring Monthly Monitoring). Due to the complex geology of the spring area, it is expected that these surface measurements represent only a fraction of the total water available for this riparian habitat. Determination of the minimum acceptable flow for Piute Spring would therefore be a complex undertaking. It is considered unnecessary in light of the actual expected impacts from the Proposed Action, as described in the Draft EIS/EIR (Section 5.3, Water Resources).
2. The Draft EIS/EIR (page 6.3-2) recommended as a mitigation measure that monitoring of project impacts to ground water levels be completed. A monitoring plan has subsequently been developed (Mark Group, 1990). As described in Section 4.1.5 (Water Resources) of this Final EIS/EIR, the data collected from this program will be used to determine if and when contingency plans would be initiated, should monitoring data detect an inconsistency in the expected results. Potential actions include:
  - Installation of additional monitoring well(s).
  - Reassessment of the Draft EIS/EIR ground water modeling.
  - Providing an alternate water supply to Piute Spring.
  - Modification or curtailment of project operations.

#### Comment 10

1. *Air Quality* - Our review of the air quality sections of the DEIS/EIR suggests that the project could contribute to violations of standards or "prevention of significant deterioration" (PSD) increments. The Clean Air Act (CAA) prohibits proceeding with any Federal action that does not conform to the State Implementation Plan (SIP) (see 42 U.S.C. Section 7506). For this reason, the DEIS/EIR should explore additional project alternatives and mitigation measures.



2. The statement on page 2.4-5 that "there is no deadline for attainment of the California Ambient Air Quality Standards" (CAAQS) is misleading: The DEIS/EIR should record that the new California Clean Air Act in fact has established requirements for meeting state standards. Furthermore, the federal Clean Air Act prohibits any action not conforming to State Implementation Plans (SIPs). This requires ensuring that standards and PSD increments are protected.

#### Response 10

1. It is recognized that the California Clean Air Act of 1988 (Cal. Health & Safety Code § 39000 *et seq.*) has significantly revised Division 26 of the Health and Safety Code by adding requirements to attain and maintain California Ambient Air Quality Standards (CAAQS). The analysis in the Draft EIS/EIR recognized the need to comply with State, as well as Federal standards. The existing text in the Draft EIS/EIR references the CAAQS, and impacts from the Proposed Action are compared to both the CAAQS and National Ambient Air Quality Standards (NAAQS) (Table 5.6.2, Castle Mountain Air Quality Modeling Results).
2. An analysis of prevention of significant deterioration (PSD) increment consumption is not applicable to the Proposed Action. The Castle Mountain Project will not emit pollutants in excess of 250 tons per year, and thus, is not considered to be a major stationary source subject to Federal PSD regulations (40 CFR 52.21(b)(1)(i)(b)).
3. The Draft EIS/EIR recognized on page 2.4-5 that the Federal Clean Air Act prohibits any action not conforming to the plans of local authorities (State Implementation Plans [SIPs]). The Castle Mountain Project site is in an area classified as being in attainment of the Federal air quality standards, as stated in the Draft EIS/EIR (page 4.6-2). The Proposed Action will conform to the SIP by operating in accordance with San Bernardino County Air Pollution Control District (SBCAPCD) rules and regulations.
4. The air quality impact analysis performed for the Draft EIS/EIR has demonstrated that the CAAQS and NAAQS in the region of the project are protected. Impacts due to project sources will not exceed either Federal or State air quality standards or contribute substantially to an existing violation. Therefore, additional project alternatives and mitigation measures are not required.

Comment 11

1. There are several indications that the proposed project may violate certain standards. First, because the predicted ozone levels come very close to exceeding State standards, it is questionable whether this standard will be met (see pages 4.6-3 and -4).
2. There are also apparent problems with meeting State and Federal particulates (PM<sub>10</sub>) standards. Stating that measured exceedances of the PM<sub>10</sub> standards "would be considered part of the natural background of the area" (page 4.6-4) is incorrect: under natural, undisturbed site conditions desert lands do not give rise to high levels of dust. Moreover, when conducting 24-hour modeling for fugitive dust, using the 18 micrograms per cubic meter annual average PM<sub>10</sub> background estimate is inappropriate; the model should use a peak 24-hour value (see page 5.6-6). This error appears again with the modeling of 24-hour and annual PM<sub>10</sub> concentrations along the Searchlight Access Route (page 5.6-12 and -13).
3. The DEIS/EIR should make correction in these assessments and then reevaluate conclusions regarding meeting National and State standards. Tentatively, it appears that traffic and onsite operations could contribute to violations of the standards.

Response 11

1. The pollutant values presented in the Draft EIS/EIR (Table 4.6.1, Summary of Ambient Air Quality Data) represent monitored ambient concentrations characteristic of the project area and applicable air quality standards. The highest measured hourly background ozone value of 0.099 ppm is slightly above the CAAQS for O<sub>3</sub> and was the only exceedance monitored during the data collection period. Due to the lack of pollutant sources in the proposed project area, high ozone levels are generally considered a transport phenomenon and result from pollutant emissions in unrelated urban areas. It has been determined, in coordination with the SBCAPCD, that NO<sub>x</sub> and ROC emissions resulting from the project, which are controlled by the best available control technology (BACT), would not cause a violation, or make worse an existing violation of O<sub>3</sub> exceedances. Thus, O<sub>3</sub> impacts are not expected to result in significant impacts.
2. The Commenter incorrectly states that "under natural, undisturbed site conditions desert lands do not give rise to high levels of dust." The data used to establish ambient levels of particulate matter was gathered in the absence of anthropogenic sources, following EPA-approved monitoring methodologies. These data showed that high levels of fugitive dust correlate with high wind speeds and dry meteorological conditions. This conclusion is further supported by



SBCAPCD Rule 403, which exempts permitted sources from particulate restrictions when average wind speeds exceed 15 miles per hour or the instantaneous wind speed exceeds 25 miles per hour. The modeling analyses showed that maximum impacts of particulate matter would occur during periods of low wind speed. The baseline monitoring data indicate that the highest TSP values were measured during high wind speeds and are not representative of ambient background particulate concentrations for the worst-case analysis of project sources.

3. Furthermore, EPA policy recognizes a greater environmental impact due to fugitive dust in urban areas as opposed to rural areas. The proposed site for the Castle Mountain Project meets EPA criteria for designation as a rural site. Thus, "any rural areas experiencing a TSP violation which could be attributed to fugitive dust could claim attainment of the TSP NAAQS" (Federal Register, Vol. 43, No. 43). EPA has also acknowledged that unusually high 24-hour concentrations may occur, during the course of a monitoring program in rural areas and that these maximum concentrations may not be representative of the average air quality in a region. EPA has recommended that fugitive dust data collected to characterize ambient pollutant levels for rural sources should be analyzed statistically to determine representative background concentrations (EPA, 1977). This approach was followed in determining a representative background level for the Castle Mountain Project. The geometric mean of all TSP monitored values, including the unusually high concentrations, was calculated and determined to be reasonably characteristic of project background particulate concentrations. This statistically-derived background concentration is very close to values measured by the EPA in other areas of the Mojave Desert (personal communication with Duane Ono, EPA, January, 1989). Therefore, using a peak 24-hour value, as suggested by the Commenter, would be inappropriate and unrepresentative of the annual average PM<sub>10</sub> background.
4. The air quality impact assessment prepared for the Draft EIS/EIR (Sections 4.6 and 5.6, Air Quality) included stationary source, as well as onsite mobile source, emissions associated with the Proposed Action. Particulate emissions from the proposed project will be minimized by application of BACT controls. Particulates from the crushing and agglomeration plants will be controlled with a combination of baghouses, water sprays, and shrouding. Fugitive dust from unpaved roads will be mitigated with water and soil stabilizers. All mitigation measures were reviewed and approved by the SBCAPCD. The modeling analysis for the Draft EIS/EIR indicated that worst-case particulate emissions will not exceed State or Federal ambient air quality standards or result in significant impacts.

Comment 12

1. In addition to the criteria for "significance" listed on page 5.6-1, the DEIS/EIR should state that impacts are significant if they affect PSD increments. In this regard, the level of nitrogen oxide emissions identified on page 5.6-4 indicates that the proposed project could be subject to PSD regulation by EPA. The DEIS/EIR should explain the assumptions about project operations on which the emissions rate is based. Unless hours of operation will be restricted through a federally enforceable permit, the estimate should assume full-time operations at full capacity.

Response 12

1. Again, the reference to PSD increments is not germane to the Proposed Action. The proposed source will not emit pollutants, including NOx emissions, in excess of 250 tons per year and so is not classified as a major stationary source subject to Federal PSD review.
2. The Applicant has submitted an Application for an Authority to Construct permit from the SBCAPCD using operational assumptions identical to those presented in the Draft EIS/EIR. Worst-case operating assumptions have been consistently applied at maximum throughput during the development of the air quality impact assessments and permit application. All equipment, with the exception of the mobile sources, are assumed to operate 24 hours per day, 365 days per year. Mobile sources will operate 20 hours per day, 365 days per year. The permit provided by the SBCAPCD will restrict operations of the source to the maximum levels specified in the application.

Comment 13

1. Overall, the mitigation proposals are very good. However, we suggest more specificity on the timing and extent of revegetation, since restoring ground cover will assist in mitigating dust problems.

Response 13

1. Potential dust impacts will be mitigated by the measures identified in the Draft EIS/EIR to acceptable State and Federal standards. It is recognized that vegetation cover will also assist in reducing dust. The specific timing and extent of revegetation is to be developed, in part, as a result of the onsite revegetation program. The timing of areas to be disturbed and reclaimed is also included in the revised reclamation plan (Viceroy, 1990). It is estimated that by Year 6 of



the project, 35 percent of the disturbed areas would be reclaimed. By Year 10, 80 percent of the disturbed areas would be reclaimed. Following project operations, the balance of the project would be reclaimed. This is expected to be completed by the end of Year 15.

#### Comment 14

1. *Reclamation* - Despite pages of detail on objectives, the DEIS provides little detail on site-specific treatment. While stated objectives of reclamation, including "reestablishment of predisturbance cover" (page 6.4-2), are laudable, feasibility is uncertain. The DEIS/EIR acknowledges that for this locale vegetative restoration is untried (page 6.4-3) and also recognizes that recovery may be slow (50 years or more) -- a time period extending long past the estimated 10 year operation of mining activities. We are concerned that the cost, time, and resource requirements (particularly water) of such a plan may be grossly underestimated. Failure to accomplish planned reclamation will have long-term repercussions for air and water quality, wildlife, and the scenic values of the east Mojave.

#### Response 14

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR for a discussion of revegetation time frames.
2. See Response No. 08 regarding revegetation water requirements.

#### Comment 15

1. The DEIS should, at a minimum, discuss the following components of the reclamation plan (including restoration of natural vegetation): (a) identification (including acreages) of the areas targeted for reclamation, and clarification of the intended degree of treatment in each area (see page 3.2-52); (b) estimation of the potential irrigation requirements; (c) means of assuring that needed maintenance will continue after operations cease, or while operations are suspended. The DEIS/EIR should specify the level of bonding appropriate to the intended scale and quality of reclamation.

#### Response 15

1. The areas intended for reclamation and the intended degree of treatment summarized for each project facility addressed in the Draft EIS/EIR (pages 3.2-52 and 3.2-53) indicate that the overburden, heap leach piles, solution ponds, building sites, roads, and other areas of disturbance are each scheduled to be reclaimed. The surfaces of these areas would be scarified

or otherwise prepared and revegetation would be initiated. Reclamation of the mine pits will include rock staining of the upper pit walls and construction of berms for public safety, as discussed in the Draft EIS/EIR (Section 3.2.8.2, Reclamation Plan).

2. See Response No. 08 regarding revegetation irrigation requirements.
3. Completion of reclamation procedures to the satisfaction of the BLM and County will be assured through the mitigation compliance monitoring program (as required by NEPA and CEQA), and guaranteed by bonding. That appropriate bonding is required as a mitigation measure satisfies the requirements of NEPA and CEQA. However, a table indicating preliminary reclamation costs that will be used to calculate bonding is shown in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

#### Comment 16

1. *Wildlife* - On the whole the DEIS/EIR responds adequately to the need to prevent wildlife access to standing waters on the mining site: clearly, netting of ponds, use of the drip leaching system, and containment of leachate in pipes are important components of this design. However, the DEIS/EIR should also explain why smaller ponds (which are more easily covered by netting) or enclosed tanks in lieu of ponds were not considered as alternatives.

#### Response 16

1. Since the potential effects to wildlife could be effectively mitigated through implementation of the design and operational measures to isolate process solutions as described in the Draft EIS/EIR, there was no reason to consider alternate design methods for the solution storage ponds. Ponds must be sized to accommodate run-off from a PMP event, plus a 24-hour draindown from the heap leach pads, as specified by the RWQCB. Since the capacity is fixed, the variables are pond length, width, and depth. The design proposed reflects constraints imposed by site conditions, including depth to bedrock, and flow of solution by gravity to the storage facilities.
2. The two suggested design concepts of storage ponds and use of solution storage tanks were described and considered in the Supplement (Section 3.2.2, Solution Storage). Use of solution storage tanks (with backup storage capacity in the form of an emergency overflow and stormwater basin) has been adopted as the preferred design for this project.



Comment 17

1. *Relationship to adjacent lands* - The DEIS/EIR does not discuss in sufficient depth potential incompatibility of the project with the intended character of the East Mojave National Scenic Area and sensitive resource areas, such as Wilderness Study Areas (WSAs) and areas of critical environmental concern. We question the judgement that, after mitigation measures have been applied, there are no significant visual, air quality, or noise impacts from mining and mine access routes on adjacent lands. For example, the DEIS asserts that increased dust, emissions, and noise "would originate from *outside* the boundaries of the [Castle Peaks] WSA and *would not be considered impacts on the WSA*" (page 5.10-6, *emphasis added*). This logic counters California State Bureau of Land Management instructions indicating that, in weighing the "significance" of mining project impacts, applicants should consider "the project's likely effect on unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, . . . wetlands. . . , or ecologically critical areas" (Instruction Memorandum CA-89-55).

Response 17

1. Policy regarding the consideration of impacts from activities outside wilderness areas on wilderness values, and application of appropriate mitigation measures, is best addressed by BLM Manual 8560, Management of Designated Wilderness Areas:
  - "No buffer zones are created around wilderness areas to protect them from the influence of activities on adjacent land. The fact that nonwilderness activities or uses can be seen or heard from areas within the wilderness does not, of itself, preclude such activities or uses up to the boundary of the wilderness area. When activities on adjacent lands are proposed, the specific impacts of those activities upon the wilderness resource and upon public use of the wilderness area must be addressed in environmental assessments or environmental impact statements, as appropriate. Mitigation of impacts from outside wilderness must not be so restrictive as to preclude or seriously impede such activities " (8560.19).
2. The Commenter's cited discussion is for effects that would be related to the Ivanpah Access Route Alternative (which is not the preferred alternative). The Draft EIS/EIR conclusion that use of the Ivanpah Access Route (adjacent to the Castle Peaks WSA) would not impact that WSA was based upon the rationale that expected impacts that could occur from limited project traffic along the existing public access would be minimal. While the Draft EIS/EIR recognized that the traffic would potentially increase air emissions and noise along this access, the degree to which these limited effects would be noticeable from the WSA would not be significant. The evaluations that led to this conclusion, as well as the determination that the project would not significantly affect other WSAs, is briefly explained in the following paragraphs.

3. The air quality analysis completed for the Draft EIS/EIR has demonstrated that the CAAQS and NAAQS in the region of the project would not be exceeded. Impacts from project sources would not exceed either Federal or State air quality standards or contribute substantially to an existing violation. No significant effects to WSA air quality are therefore expected.
4. The Draft EIS/EIR evaluated the compatibility of the Castle Mountain Project with the EMNSA in Sections 4.10 and 5.10 (Land Use). As also discussed in Section 4.1.7 (Land Use) of this Final EIS/EIR, the project would be consistent with EMNSA Plan requirements. The Draft EIS/EIR also considered the potential significant environmental effects of the Proposed Action on WSAs and other sensitive resources. WSAs, Areas of Critical Environmental Concern, and Outstanding Natural Areas in the vicinity of the project were shown in the Draft EIS/EIR (Figure 4.10.2, Lanfair Valley Recreational, Environmental, and Wilderness Management Features). In the course of the Draft EIS/EIR evaluation, it was determined that sights and sounds originating from the project would not significantly effect surrounding WSAs due to their distance from the site and/or the intervening topography of the Castle Mountains.
5. Draft EIS/EIR Figure 5.8.1 (Visual Analysis Viewpoints) shows where views from surrounding locations would be interrupted by topography. The closest uninterrupted viewpoint from a WSA is at viewpoint No. 2 (WSA 266) which is over two miles from the site. While the visual rendering from this viewpoint (Draft EIS/EIR Figure 5.8.3, Viewpoint No. 2, Railroad Grade Road) showed that project facilities would be visible from this location, it was evident that the contrasts created from the project were not substantially greater than the existing contrasts from previous mining. Following reclamation, the overall color contrast would actually be reduced, through reclamation of the existing clay pit. The distance from this WSA to the project site also attenuates the perception of surface disturbance. Uninterrupted views from WSA 267 are generally greater in distance. Based upon these photographs and the VRM contrast rating analysis, it was therefore determined that the project would not significantly affect views from surrounding WSAs.
6. The effects of project noise would also be greatly attenuated by intervening topography and distance. A noise analysis was completed to evaluate the offsite effects of mining equipment. Based upon the equipment described in the Draft EIS/EIR (page 3.2-28) that would be in use at one time, the combined sound level at a distance of 50 feet would be about 104 dB. Attenuation of this noise by distance and atmospheric absorption is shown below:



**EQUIPMENT NOISE ATTENUATION (dBA)**

DISTANCE	DISTANCE ATTENUATION	ATMOSPHERIC ABSORPTION	TOTAL ATTENUATION	EQUIPMENT SOUND LEVEL
50 feet				104
100 feet	6	0	6	98
1,000 feet	26	2	28	76
1/2 mile	35	4	39	65
1 mile	41	8	49	55
3 miles	50	24	74	30
5 miles	54	41	95	9

Explanation: The above data shows sound levels at various distances from the pit, with only distance attenuation and atmospheric absorption, without any consideration to attenuation from surrounding hills, berms, ground effects, or vegetation. These projections also ignore attenuation from equipment operating below grade in the pit.

Source: TRC Environmental Consultants.

7. The location of most of these project activities and noise sources would be in the approximate center of the site, in the vicinity of the mine pits, overburden pile, and crushing plant. As such, the above data demonstrates that at the southern and western site boundaries (where intervening topography does not greatly interfere with sound waves), the distance is generally over 1.5 miles, and the equipment sound level would be below 55 dB. Within 1.5 miles of the site boundary (three miles from the center of noise sources), the equipment sound level would be about 30 dB. This sound level is below the 35 dB average ambient sound level in the desert environment. The nearest points in WSA 266 and WSA 267 that are uninterrupted by topography are four to five miles from these noise sources. The equipment sound level at this distance would be about 9 dB. Because noise levels would fluctuate in response to variations in equipment operations at the site, and the offsite noise impacts would vary because a number of factors affect sound travel, or propagation, these projections are based upon a worst-case analysis. Equipment would move over a relatively large area at the mine. As the equipment moves, the distance and topographic features between the source and the receiver may change, which affects how much the sound is attenuated as it travels offsite.
8. With regard to the Commenter's citation for noise from offsite (access road) traffic, a noise analysis was completed using the Federal Highway Administration (FHWA) methodology developed by the EPA to evaluate the peak traffic on the access route. To determine the

decrease in sound levels at various distances from the road in an unpaved area, the FHWA methodology applies a 4.5 dBA decrease with each doubling of the distance from the road. This factor provides a conservative estimate because it does not take into account additional sound attenuation attributable to intervening terrain, vegetation or other obstructions. Based upon a morning peak hour traffic volume of 32 vehicles (and assuming no existing traffic) the following sound levels are estimated:

#### ACCESS ROAD PEAK PERIOD EQUIVALENT SOUND LEVELS

Distance from Road (feet)	50	100	200	800	3,200
Traffic Sound Level (dB)	62	57.5	53	44	35

These data indicate that at 3,200 feet (about 0.6 miles) from the road, the traffic noise level would be similar to the average ambient condition.

9. It should be noted that noise analyses evaluate sound levels and are not indicative of the characteristics of the noise source. Therefore, a receptor may be able to distinguish anthropogenic noise sources from "natural" sounds even at lower noise levels. In addition, ambient noise levels fluctuate even in remote areas (such as when wind blows), and equipment noise may be more noticeable at nearby locations when ambient noise levels are low.
10. In summary, the environmental analyses and data indicate that the integrity of surrounding WSAs would not be significantly affected by the proposed project activities. However, a user's perception of wilderness is individual, and while the activities outside the WSA would not impact the WSA itself, it is recognized that the user's perception of wilderness may be altered when any man-made features are evident.





#### 4.2.1.2 STATE AGENCIES

Letter 1: State of California, Department of Conservation

Letter 2: State of California, Department of Fish and Game

Letter 3: State of California, Department of Justice, Attorney General's Office

Letter 4: State of California, State Lands Commission







## LETTER 1: STATE OF CALIFORNIA, DEPARTMENT OF CONSERVATION

Comment 01

1. The Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code Section 2710 *et seq.*) requires that a reclamation plan be submitted to and approved by the lead agency *prior* to project approval. The reclamation plan must be submitted as a separate document, filed on a form provided by the Lead Agency, who, in this case, is San Bernardino County. We recommend that the reclamation plan be included as an Appendix to the EIS/EIR. Also, it should be noted that SMARA requires at least one public hearing on the reclamation plan, after it is completed. Our Mine Reclamation Program staff will provide the County with technical assistance in the review of this plan, if requested.

Response 01

1. The Applicant filed a draft reclamation plan as part of the initial Application to the County. That plan has now been revised, based upon the recommendations during the environmental review process. That document has been transmitted to the Department of Conservation, and is on file at the County of San Bernardino Land Management Department for public review. The County will hold a public hearing on the Castle Mountain Project to consider the Final EIS/EIR, reclamation plan, and mining plan in accordance with State requirements.

Comment 02

1. Given the disseminated nature of the deposit and the economics of gold recovery, more emphasis should be placed on the evaluation of the quantity and quality of the residual deposit. The evaluation may be helpful in assessing whether or not pit backfilling can be accomplished without impacting future mining potential.

Response 02

1. See Section 3.3.1.2 (Known Mineralization and Potential Reserves) of this Final EIS/EIR for additional discussion on the quantity of additional ore and future mining potential.

Comment 03

1. The preliminary considerations given to revegetation and wildlife habitat are appropriate. The suggested "elements" should be detailed in the reclamation plan.



Response 03

1. Comment noted. The final reclamation plan does provide additional details on the revegetation elements recommended in the Draft EIS/EIR. The contents of that plan are briefly summarized in Section 1.5 (Final Reclamation Plan) of this Final EIS/EIR. A copy of the plan has also been sent to the Department for review.

Comment 04

1. Table 1 of the "Biological Resources Survey," prepared by Patrice Gould, lists nineteen plant species which qualify for State-listing as having the potential to occur on the project site. Three of the species were recorded on the site, but the biotic document states that the rest may not have been visible at the time of the survey (e.g., annual species). The Draft EIS/EIR discusses only five of the species listed in Table 1. If the potential exists for the remaining fourteen species to occur on the project site, then additional surveys during the correct flowering season or mitigation measures may be necessary.

Response 04

1. The Draft EIS/EIR considerations for each of the potentially occurring sensitive plant species that were listed by Patrice Gould (April, 1987a, 1987b), are included in Appendix F of this Final EIS/EIR. Gould's report indicated that the listing of vegetation for the Castle Mountain Project site was not intended as exhaustive. In the course of preparing a comprehensive species list for the Castle Mountain Project Draft EIS/EIR, Gould's report and other available data were used and supplemental site visits were made. While the overall list of species presented in the Draft EIS/EIR was expanded (as compared to Gould's list), some species were subtracted, as noted by the Commenter, based upon the absence and/or specific habitat requirements of these species. The list of plant species and sensitive species provided in the Draft EIS/EIR (Appendix C, Wildlife and Vegetation Species Lists) represents a complete inventory. No additional surveys are therefore necessary for purposes of this Final EIS/EIR.
2. It should be noted that presence of *Penstemon stephensii*, included in the Draft EIS/EIR as a potentially occurring species, has been confirmed. A small population of this species (a Category 2 Candidate) which is commonly found on disturbed soils, has been located along a mining exploration drill road (see Appendix F of this Final EIS/EIR). While the Proposed Action would not disturb this population, mitigation measures have been included for its protection during drill road reclamation and for other populations that may colonize disturbed sites, during the project operations (see Section 3.2.1, Additional Mitigation Measures of this Final EIS/EIR).

Comment 05

1. It may not be appropriate to evaluate the response of discharge at Piute Springs to lowered ground water levels in the west well field based on modeling of fluid flow through a porous medium. Piute Springs is known to emerge from fracture or fault systems, which may transmit ground water in a much less predictable fashion. It has been suggested that the observed fluctuation of spring discharge could be related to a relatively-isolated collection (recharge) area within the larger Lanfair Valley aquifer recharge area or within the fractured and faulted Piute range itself. The documents should address this issue, particularly in connection with east well field development.

Response 05

1. It was determined as a result of the analysis for the Draft EIS/EIR that Piute Spring discharge is indeed related to fracture and fault systems. Faults were mapped and shown in Figure 3.6 of *Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring* (Environmental Solutions, Inc., 1989). However, while these faults may be responsible for discharge at a particular point, their influence is localized. The Lanfair Valley aquifer which supplies water to the spring area is a typical porous media aquifer, as shown in the Draft EIS/EIR (Figure 4.3.5, Lanfair Valley Hydrogeologic Cross Section). The modeling used for this aquifer is therefore appropriate.

Comment 06

1. Specific monitoring plans should be developed for any mitigation measures that are implemented. Bonding to ensure compliance should be carefully evaluated.

Response 06

1. Comment noted. A program of mitigation compliance monitoring has been developed for consideration by the BLM and County in accordance with Federal and State requirements. A copy of the draft program was included in the Supplement (Appendix E, Draft Mitigation Compliance Program). Bonding will be required to the satisfaction of both the BLM and County, and is discussed in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.



## LETTER 2: STATE OF CALIFORNIA, DEPARTMENT OF FISH AND GAME

Comment 01

1. In our comments to the BLM on previous mining projects the Department of Fish and Game has expressed its concern regarding the increasing use of the cyanide heap leach process to recover gold. Heap leach mining has potential cumulative effects on local and possibly migrating wildlife. We reiterate that measures are needed to prevent wildlife mortality at each mining operation utilizing the heap leach process within the jurisdiction of the BLM and the County and that the California Environmental Quality Act (CEQA) requires a follow-up monitoring program. Enforcement of rules and regulations and routine inspection of facilities are also necessary. We request that the Department be kept informed of the results of the monitoring and the enforcement activities. Additionally, we urge that the potential cumulative impact of the heap leach process on wildlife resources, particularly those species that are attracted to the proposed heap leach ponds there, be evaluated. We strongly recommend that approval of further heap leach projects be held in abeyance until this evaluation has been completed. While the process may be a demonstrated means of extracting gold from low grade ore, it may result in long-term detrimental impacts to desert wildlife.

Response 01

1. The BLM requires monthly reports from mining operators on wildlife, including any deaths attributable to mining and processing activities. Compliance with operating conditions is completed by BLM no less than quarterly, in accordance with inspection and enforcement procedures.
2. The Draft EIS/EIR (Section 5.5, Wildlife) identified potential effects on desert wildlife. Draft EIS/EIR mitigation measures developed to isolate cyanide solution from wildlife, included fencing, netting, drip irrigation, and solution piping, especially at the proposed solution storage ponds. The Supplement (Section 3.2.2, Solution Storage), subsequently explained that the solution storage concept has been revised to use tanks, which would similarly provide isolation of cyanide solutions from wildlife. An evaluation of the cumulative effects of the Proposed Action, other mining projects, as well as other activities in the region, was completed in the Draft EIS/EIR (Chapter 8.0, Cumulative Impacts).
3. A mitigation compliance monitoring program will be adopted by the BLM, as required by Federal regulations, and the County, in compliance with CEQA (Cal. Pub. Reg. Code § 21081.6). The program which was described in the Supplement (Appendix E, Draft

Mitigation Compliance Program), will include enforcement procedures and provisions for routine inspection of the mining operation and reporting of the effectiveness of the wildlife protection measures. The results of these monitoring activities will be made available to the DFG and other agencies who request them.

4. The potential cumulative effects from heap leach processing and other potential impacts of the Proposed Action and other activities were evaluated in Draft EIS/EIR Chapter 8.0 (Cumulative Impacts).

#### Comment 02

1. The water supply need for the project, approximately 725 acre-feet or more per year, would be from approximately 10 wells from the West Well Field located approximately two miles northwest of the project site. The document fails to evaluate the potential impact of this water extraction on springs and other water sources in the area of the West Well Field, particularly Indian Spring, Talc Spring, Kidney Spring, Willow Spring, Hidden Spring, Coats Spring, Stagecoach Spring, and Dove Spring. These water sources are extremely important to upland game, deer, bighorn sheep, and the desert tortoise. The project sponsor should be required to complete a detailed study in order to determine potential impacts associated with proposed extraction activities. Should this study indicate that such potential impacts to water sources would result from proposed water extraction, then these impacts must be fully compensated. Irrespective of the results of the study, the project sponsor should be required to monitor the effects of the proposed project upon water sources. These monitoring records should be made available to the BLM and the Department for review, and if a drawdown is noted, then an alternate water supply must be provided for the project.

#### Response 02

1. Indian Spring, Talc Spring, Kidney Spring, Willow Spring, Hidden Spring, Coats Spring, Stagecoach Spring, and Dove Spring are located outside of the Lanfair Valley drainage basin, as can be seen in the Draft EIS/EIR (Figure 4.3.4, Location of Well and Spring Data Points). Accordingly, Lanfair Valley aquifer drawdown from the West Well Field would not affect these water sources. Other springs located within the Lanfair Valley drainage basin are located either above the elevation of the West Well Field or are outside of the projected aquifer drawdown area. As such, they would not be expected to be affected by project ground water withdrawals.



2. A detailed study of the potential impacts associated with project ground water withdrawals was completed for the Draft EIS/EIR. The results, as summarized in the Draft EIS/EIR (Sections 4.3, 5.3, and 6.3, Water Resources), indicate that no significant impact to Lanfair Valley water sources is expected. The primary water source of concern is Piute Spring, which is located down-gradient, 16 miles from the West Well Field. While the results of the hydrogeologic analysis determined that project ground water withdrawals would not affect Piute Spring, a monitoring program for Piute Spring and areas surrounding the West Well Field will be required by BLM. Results of the monitoring program will be made available to the DFG and other agencies upon request.

#### Comment 03

1. The document also mentions that two upland game water guzzlers that would be affected are to be relocated. The Department should be consulted regarding selection of new sites for the watering facilities.

#### Response 03

1. Comment noted. The BLM will coordinate with the DFG in selecting appropriate sites for the wildlife guzzlers.

#### Comment 04

1. Approximately 1,110 acres of wildlife habitat would be lost due to the open pit mining operation and construction of access roads, well fields, water pipelines, electrical transmission lines, and natural gas pipelines. Potential impacts to sensitive desert resources, particularly the bighorn sheep and desert tortoise, would occur over a period of time extending well beyond the life of the project. Measures in the document indicate that habitat restoration would occur through revegetation and reclamation programs and by natural plant succession. Revegetation programs in the desert have generally proved less than successful and may take a much longer time than the 30-60 year period stated in the document.

#### Response 04

1. The Draft EIS/EIR (Section 5.5.1, Wildlife), indicates that about 890 acres, or approximately 30 percent of the wildlife habitat on the 2,735 acre site would be disturbed. An additional 20 to 40 acres would be disturbed for road improvements along the Mitigated Searchlight Access Route, as described in the Supplement (Section 3.2.1). Offsite water pipelines, electrical transmission lines, and the natural gas pipeline would be located in existing access rights-of-way and would not be expected to result in additional habitat disturbance.

2. The success of past revegetation "programs" at other locations in the desert may not be applicable to prevailing conditions at the Castle Mountain project site and in Lanfair Valley, owing to the higher rainfall regime that exists there. Moreover, the level of effort, expertise, site specific nature, funding, and other factors relating to the referenced past revegetation efforts may have greatly affected their success.
3. A comprehensive revegetation program would be required as part of the Castle Mountain Project. The revegetation program would be designed to minimize the time required for revegetation. It was recognized in the Draft EIS/EIR that natural revegetation in Lanfair Valley may require 30 to 60 years without artificial support. Assistance through revegetation procedures is expected to accelerate the natural revegetation process. This issue is further discussed in Section 4.1.4.2 (Revegetation) of this Final EIS/EIR.
4. In addition, it should be noted that the project has incorporated in its reclamation plan the reclamation of other previously disturbed areas that will help to offset project impacts.

#### Comment 05

1. Also, there is the issue of loss of desert tortoise, bighorn sheep, and other wildlife habitat in the interim period until habitat for these species has been reestablished to pre-project quality. This is a significant impact, and it should be thoroughly discussed in the document. The document does not provide compensation for the loss of desert tortoise and bighorn sheep habitat. Tortoise surveys within the project area indicate that the site contains good tortoise habitat which supports a moderately high population. The loss of 2,735 acres of this habitat would seriously affect the desert tortoise which is presently being considered for listing as a threatened species under both the California and Federal Endangered Species acts. The loss of this valuable tortoise habitat cannot be fully mitigated/compensated; however, if the project is approved, we believe that the acquisition, protection, and management of five acres purchased for each acre destroyed is necessary to minimize the adverse impacts of this mining operation. The land should be purchased in a Category 1 tortoise habitat as identified by the Department and title transferred to an appropriate public agency or conservation organization for protection and management in perpetuity for the benefit of the desert tortoise.



Response 05

1. The Draft EIS/EIR described the project site as being located in Category 3 tortoise habitat. Subsequent surveys undertaken in conjunction with the Biological Assessment and Biological Opinion confirm that tortoises, if present at all, are in very small numbers. Figure 4.7 shows that the area encompassing the project site is not recognized as Category 1 or Category 2 habitat by the BLM. Certainly there is no evidence to support a claim that "the site contains good tortoise habitat which supports a moderately high population," nor is it accurate to characterize it as "valuable tortoise habitat." It is therefore not apparent that this project could significantly affect the tortoise, especially where only very low density habitat would be disturbed. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a further discussion of project site tortoises showing little, if any, use of the site by the tortoise.
2. It should be noted that determination of the significance of project impacts to wildlife in the Draft EIS/EIR was based on appropriate criteria using the degree of impact in relation to the available resource. Impacts were considered significant if they could create one or more of the following conditions:
  - Substantially diminish the habitat for a wildlife species.
  - Interfere substantially with the movement of resident or migratory wildlife species.
  - Substantially affect a threatened or endangered species or its habitat, or a species officially proposed as threatened or endangered.

These criteria are consistent with "significant effects" as defined in CEQA (Cal. Pub. Res. Code § 21060.5 and 21068).
3. Use of the project site by desert tortoise is limited. The site lies at an elevation above that generally desired by the species. This area is therefore classified by BLM as Category 3 habitat, which is considered marginal. Based upon the degree of expected project impact and the marginal quality of desert tortoise habitat, it has been determined that the project impacts to the tortoise can be fully mitigated. The CEQA Guidelines and NEPA (40 CFR § 1502.16) define several methods for mitigating an effect. Project mitigation for the tortoise therefore includes:

Available Forms of Mitigation  
(CEQA Guidelines, Section 15370)

Avoiding the impact altogether by not taking a certain action or parts of an action.

Minimizing impacts by limiting the degree or magnitude of an action.

Rectifying the impact by repairing, rehabilitating, or reclaiming the impacted environment.

Reducing or eliminating the impact over time by preservation and maintenance.

Compensating for the impact by replacing or providing substitute resources or environments.

Castle Mountain Project  
Tortoise Mitigation

The Mitigated Access Route has been selected as the preferred access alternative to avoid impacts to the Ivanpah Valley desert tortoise population.

Project traffic through desert tortoise habitat would be limited through use of vanpooling.

The project area would be reclaimed following completion of operations for use by wildlife.

The employee awareness program and onsite fencing to exclude tortoises from project activities would maintain the local population.

Funds would be contributed for purchase of habitat that will be dedicated to long-term preservation of the species.

4. Compensation for desert tortoise habitat loss has been provided as required by FWS and DFG through their respective formal and informal consultation processes. The Applicant will fund purchase of desert tortoise habitat.
5. While the biological field investigations determined that the project site is used by bighorn sheep, there is no evidence that the site provides more desirable habitat for this species than other areas in and around Lanfair Valley. Bighorn sheep have been observed at upper elevations on the project site. Since most project activities are planned to occur on lower slopes or the valley floor, there is no evidence that the Proposed Action would substantially diminish the available bighorn habitat or interfere substantially with its movement.

Comment 06

1. As noted above, the desert tortoise is a State Candidate species and the California Endangered Species Act prohibits the take of State Candidate species (Fish and Game Code Sections 2080 and 2085). It seems probable that the development of this mining project would result in the take of desert tortoises.



Response 06

1. Comment noted. It is further recognized that the current State and Federal designations for the tortoise are *threatened*. Incidental take of an endangered or threatened species may be permitted if the formal and informal consultations under the Federal Endangered Species Act (16 U.S.C. § 1536) (Section 7) and DFG requirements, respectively, have been completed and mitigation measures have been implemented, in accordance with the Biological Opinion resulting from the formal consultation. FWS will issue an incidental take permit for the Castle Mountain Project. The operator will be required to consult with the DFG and the FWS regarding incidental take.

Comment 07

1. Bighorn sheep have been observed within the Castle Mountain range and in areas in the surrounding mountain ranges. The Castle Mountain range provides important bighorn sheep habitat and supports a sizeable population. Once this habitat is lost, the bighorn sheep population would be *permanently affected* and, unless transplanted, would be lost. This potential loss is inconsistent with Department efforts to expand and improve the desert bighorn sheep population in the State. The document fails to adequately address this potential loss and to define an action plan to prevent such loss from occurring. The loss of habitat, water sources, and effects of project operation will undoubtedly adversely affect this protected species. The project sponsor has indicated a possible willingness to install bighorn sheep watering facilities in offsite areas. While this may serve to attract and concentrate bighorn sheep and keep them from moving into the project area, it does not compensate for the loss of habitat and animals. We recommend this issue be thoroughly addressed in the document and that measures to offset these impacts be provided.

Response 07

1. During the life of the operation, the Proposed Action would incrementally degrade desert habitat that is used by bighorn sheep. Bighorn sheep would be able to use the majority of the undisturbed and inactive areas of the site during the operational period. Following operations, it is expected that the site would continue to be used by the bighorn. Based upon similar uses by bighorn sheep at the Eagle Mountain Mine, located north of Desert Center, the Draft EIS/EIR determined that the project would disturb less than three percent of bighorn sheep habitat in the Castle Mountain/northern Piute Range region. There is no indication that this habitat area is at its carrying capacity for bighorn, especially in view of the current population level of about 15 individuals. The DFG has similarly reported that "undoubtedly, most bighorn ranges supported two or three times the present number..." (DFG, 1982).

2. The flow of springs and other water sources available to the bighorn sheep are not expected to be affected by the Proposed Action, as determined through the Draft EIS/EIR hydrogeologic investigations (see Sections 4.3 and 5.3, Water Resources). The Draft EIS/EIR recommended that the two wildlife guzzlers that would be near project activities be relocated/reconstructed at more suitable locations. The final locations for those guzzlers will be determined by BLM, in consultation with the DFG and FWS.

#### Comment 08

1. The discussions of improvements and vehicular use of the Ivanpah Access Route and the Searchlight Access Route discussed potential impacts to desert tortoise but failed to discuss potential impacts to bighorn sheep. The greater amount of potential impact would occur via the Searchlight Access Route due to bisection of migratory movements of bighorn sheep from the New York, Castle, Hart, and Piute Mountain ranges. We recommend that measures be provided in the document to protect desert tortoise and bighorn sheep from the potential effects of heavy, high-speed vehicular use of the access roads. We recommend against the use of wire fence and suggest using rail fencing and modified 9-foot diameter culverts at road crossings.

#### Response 08

1. The access road would be designed for a maximum speed of 35 mph, to discourage high-speed use. The traffic associated with this project is also limited (i.e., the estimated 108 Average Daily Trips is less than the traffic attributed to eleven single family homes). The Draft EIS/EIR indicates that project traffic levels would be reduced and controlled through the use of vanpooling sponsored by the Applicant. The speed limit would be posted and enforced through the employee education program.
2. There are presently no known bighorn sheep in the Castle Peaks area. Bighorn usually stay within a region defined generally by mountain ranges. There is no evidence that in recent years bighorn sheep from the Castle Mountains/Piute Range have migrated across the proposed access route to the Castle Peaks area. The potential for conflict with project traffic is therefore expected to be low. No significant impacts to the bighorn sheep have resulted from other mines, such as Colosseum, with construction, operation, and access within their habitat.



Comment 09

1. The document contains a comprehensive description of the project but does not provide adequate mitigation/compensation for potential impacts to desert resources and habitat losses, particularly for the desert tortoise and bighorn sheep. Therefore, we urge the BLM to require the project sponsor to provide a more in-depth assessment of potential impacts of the project upon desert biological resources. This in-depth assessment should be in the form of a Supplemental Draft EIS/EIR designed to address all of those general and specific concerns expressed in this memorandum. We strongly recommend against certification of this Draft EIS/EIR, and, for reasons previously expressed, we find that this document is inconsistent with National Environmental Policy Act and California Environmental Quality Act requirements related to full public disclosure of project impacts and the incorporation of feasibly implementable mitigation measures.

Response 09

1. In response to the listing of the desert tortoise by DFG and FWS, a supplement to the Draft EIS/EIR was issued, as requested by the Commenter.
2. *Note to Readers: The FWS has since issued a Biological Opinion, based on the detailed Biological Assessment, that concludes the Proposed Action will not jeopardize the desert tortoise (see Appendix G of this Final EIS/EIR).*
3. The available evidence, as discussed in the Draft EIS/EIR (Section 5.5, Wildlife) and repeated in Section 4.1.6 (Wildlife) of this Final EIS/EIR, states that the project would not significantly affect the bighorn sheep. No information has been presented in comments on the Draft EIS/EIR that would indicate otherwise. Supplemental information in this regard is therefore not necessary.

Comment 10

1. Due to the potential impacts to desert wash environments, diversion, obstruction of the natural flow, or changes in the bed, channel or bank of any river, stream, or lake will require notification to the Department as called for in the Fish and Game Code. This notification (with fee) and the subsequent agreement must be completed prior to initiating any such changes. Notification should be made after the project is approved by the lead agency. It is the policy of the Department to oppose the authorization of any projects which would result in the loss of either wetland acreage or wetland habitat values.

## Department of Fish and Game

Response 10

1. Comment noted. The Proposed Action is not located in an area with surface waters and would therefore not affect wetland acreage or wetland habitat values. The Applicant will apply to DFG for a Stream Alteration Permit respecting ephemeral dry washes.

Comment 11

1. Page 1.1-13, Table 1.1.1. The statement is made that "Several measures to isolate wildlife from processing solution shall be incorporated into project plans. Fencing around solution ponds shall exclude large animals. Sheet metal shall be used at and below ground level to exclude small burrowing animals." The word "fencing" should state chain link fencing as stated in the draft at the bottom of page 3.3-17.

Response 11

1. Comment noted. Chain link fencing was described in the Draft EIS/EIR (page 6.5-2) as the material to be used surrounding the solution storage ponds. The current solution storage tank design (see Section 3.1, Final Project Design, of this Final EIS/EIR) similarly employs such fencing.

Comment 12

1. Page 3.2-23, Section 3.2.5.1. If water wells are drilled in land owned by the State of California, a State Lands Commission permit will be required. This will necessitate coordination with the Department of issuance by the Department of a Biological Opinion.

Response 12

1. Comment noted. It is recognized that formal consultation with DFG would be required if a State agency were the Lead Agency for this project.

Comment 13

1. Page 3.2-24, Section 3.2.5.2, Power Requirements and Supply. Power transmission poles may serve as resting and/or roosting places for ravens. These can be serious predators on tortoises, so the poles should be constructed with devices which would preclude their use by ravens.



Response 13

1. Comment noted. A mitigation measure has been added in Section 3.2.1 (Additional Mitigation Measures) of this Final EIS/EIR to require power line poles to be constructed in a manner to discourage use by ravens for resting, roosting, or nesting.

Comment 14

1. The Draft EIS/EIR does not adequately address impacts of the planned natural gas pipeline which will extend from Searchlight to the project site. All impacts of this pipeline should be discussed as well as mitigation/compensation measures needed to offset such impacts. Acreage disturbed by this development should be included in the project's area of land disturbance for compensation purposes.

Response 14

1. As discussed and shown in the Draft EIS/EIR (Section 3.2.5.2, Power Requirements and Supply, and Figure 3.2.9, Preliminary Utilities Plan), the natural gas pipeline would be constructed "within the alignment of the proposed Searchlight Access Route." This alignment was selected so that additional land disturbance would not be necessary. Impacts and mitigation measures for the Searchlight Access Route were considered in the Draft EIS/EIR (Chapter 5.0, Potential Environmental Impacts). No additional mitigation measures would therefore be required for the natural gas pipeline.

Comment 15

1. Page 3.2-52, Section 3.2.8.3, Bonding. The acreage included in the bonding calculations for revegetation should also include the Ivanpah Access Road, the Well Field Access Road, the gas line and its access road, as well as other areas of disturbance identified in this section.

Response 15

1. The Ivanpah Access Route is an existing improved County road from Ivanpah to Barnwell, and an existing road from Barnwell to the project site which is periodically graded by companies with mineral claims in the area. Reclamation of this access is therefore not required for this project. As explained in Response No. 14, above, the natural gas line would be placed within the alignment of the Searchlight Access Route. Portions of this access route are planned for reclamation. Well field service roads are also planned for reclamation and are included as part of the "onsite roads" calculations in the Draft EIS/EIR. Bonding calculations for roads are summarized in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

Comment 16

1. Page 6.5-2, Section 6.5.1.2, Heap Piles. The drip irrigation and sprinkler system for applying cyanide on the heap piles should be monitored to ensure that puddling and ponding of cyanide-bearing water does not occur. Any such pools would prove attractive to wildlife with fatal results.
2. While the mitigation measures applied to the cyanide treatment process will likely prevent wildlife losses, the system should be monitored weekly by a biologist hired by the project sponsor. Wildlife losses should be documented and data furnished at least monthly to BLM and the Department. Significant die-offs should be immediately brought to the attention of these agencies. The weekly monitoring should extend for at least two years.

Response 16

1. Comments noted. A program for mitigation compliance monitoring of the Castle Mountain Project was described in the Supplement (Appendix E). Onsite monitoring by the environmental specialist/consultant would be performed continuously. The solution distribution system would be monitored for potential ponding as part of this program. The results will be reported to the BLM and County. BLM currently requires each mining operation in California using heap leach technology to report on a monthly basis all wildlife deaths attributed to cyanide. The BLM will coordinate with the DFG regarding the effectiveness of the mitigation measures. Monitoring will be accomplished for the life of the project.

Comment 17

1. Relocation of tortoises due to conflict with project construction should be coordinated with the Department in addition to the BLM.

Response 17

1. Comment noted. Should a tortoise be found onsite, relocation would be completed in coordination with FWS, DFG, and BLM in accordance with specified procedures.



Comment 18

1. The Department firmly believes that tortoise-proof fencing is necessary where access roads to the mine extend through tortoise habitat. Additional surveys along the roadways in the Lanfair Valley may be necessary to more closely delineate tortoise habitat there. As discussed in the Draft EIS/EIR, culverts are also necessary to allow passage of tortoises across the roadways and prevent fragmentation of their habitat.

Response 18

1. Tortoise-proof fencing and culverts were recommended in the Draft EIS/EIR (Section 5.5, Wildlife) along access roads through crucial desert tortoise habitat. However, as discussed in the Supplement (Section 3.2.1, Mitigated Searchlight Access Route) the access plans have been changed, as a result of public and agency comment on the Draft EIS/EIR, to avoid travel through Category 1 habitat. Additional surveys were undertaken along the access road, as discussed in the Supplement (Section 3.2.1, Mitigated Searchlight Access Route). These confirmed earlier estimates of very low densities. Accordingly, installation of tortoise fencing and culverts is unnecessary.

Comment 19

1. The Department opposes the clause in the Draft EIS/EIR (page 6.5-4) which allows the installation of tortoise fencing to be at the discretion of the BLM and allows fencing money to be used for other purposes relating to tortoise management. While the other purposes are worthy of funding, they do not mitigate the impacts of the proposed mining operation on tortoise populations existing in that area.

Response 19

1. Mitigation Measure No. 5, as stated in the Draft EIS/EIR (page 6.5-4) provides that:

At the discretion of BLM, funds equivalent to the calculated fencing costs could be contributed by the Applicant as an alternative to fencing, for use in habitat enhancement, land acquisition, or studies to benefit the desert tortoise.

This recommendation is consistent with the BLM *Recommendations for Management of the Desert Tortoise in the California Desert* (July, 1988). This provision was included to provide the BLM some flexibility in determining how the desert tortoise mitigation funds for this project could be best used to benefit the species. For example, if fencing along roads through tortoise habitat were to be required, it may be preferable to have the fencing constructed along heavily used roadways in Category 1 habitat, instead of along seldom or lightly travelled

roads in the marginal Category 3 habitat in the vicinity of the project site. Similarly, use of the funds for purchase of land or for funding improved management of crucial desert tortoise habitat may provide for greater overall enhancement of the species. Determination of the best use of desert tortoise mitigation funds will be determined by BLM in coordination with FWS and DFG.





LETTER 3: STATE OF CALIFORNIA, DEPARTMENT OF JUSTICE,  
ATTORNEY GENERAL'S OFFICE

Comment 01

1. It is evident from the Draft EIS/EIR and from the size of the project itself that the project has the potential to significantly impact the physical and visual integrity of the East Mojave National Scenic Area and the California Desert Conservation Area. Visitors from throughout Southern California value the desert area for its natural environment and recreational opportunities.

Response 01

1. While it is evident from the Draft EIS/EIR that elements of the project, if not properly mitigated, could result in significant impacts to elements of the physical environment, it should be noted that the determination of such significance is not generally associated with the particular size of a project. Guidance for determination of significant effects, as provided in CEQA (Cal. Pub. Res. Code § 21060.5 and 21068), relies on the assessment of project effects in the context of the resource sensitivity and the available quality and quantity of the affected resource. Analyses of potential visual resource impacts in particular relate to the contrast with the surrounding area in terms of color, form, etc., rather than size. The Proposed Action and mitigation measures identified in the Draft EIS/EIR have been designed to minimize the impact to the visual integrity of the EMNSA.

Comment 02

1. In addition, the project could also significantly affect wildlife in the area, most importantly the desert tortoise, which is being considered for listing as a threatened species under both the State and Federal Endangered Species acts, and the desert bighorn sheep, whose population the Department of Fish and Game is trying to increase in the state.

Response 02

1. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussion on the current status of the desert tortoise and the determinations of FWS and DFG for the Castle Mountain Project.
2. No substantive reasons demonstrating the potential for the Proposed Action to significantly affect the bighorn sheep has been identified as a result of the Draft EIS/EIR analysis, or comments on the Draft EIS/EIR. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for further discussion on the bighorn sheep.

Comment 03

1. In light of the unique environment at issue, it is particularly important that the Draft EIS/EIR fully analyzes the potential impacts of the project, as well as possible mitigation measures. As will be discussed in detail below, we believe that the Draft EIS/EIR is wholly unacceptable as an environmental review of a reclamation plan, as the plan it purports to review has not yet been developed. It also does not adequately address all of the potentially significant impacts on wildlife and relies on vague and undefined mitigation measures.
2. Reclamation Plan - The Surface Mining and Reclamation Act (SMARA) (Public Resources Code §2710 *et seq.*) requires a reclamation plan to have been submitted and approved before any surface mining operations can be conducted. Although the EIS/EIR states that a reclamation plan was submitted to the County in March 1988, we were informed that the plan was rejected by the County and is being revised by the Viceroy Gold Corporation to be submitted *after* the EIS/EIR is completed. We have also been told that the County intends for this EIS/EIR to fulfill CEQA review requirements, and does not plan to issue a supplemental or subsequent EIR specifically on the reclamation plan.
3. Such a process would not satisfy CEQA requirements. CEQA requires at a minimum that the reclamation plan be specifically identified and described so that its impacts and effectiveness can be evaluated. Obviously, such an evaluation can only take place *after* the plan has been developed and its details are known. In addition, SMARA requires at least one public hearing on the reclamation plan after it is completed.

Response 03

1. As discussed in the Draft EIS/EIR (page 2.1-1), a proposed site plan and reclamation plan were submitted to the County by Viceroy (May, 1988) as part of its application to the County. The County informed the Applicant in writing on July 19, 1988, that the application for site and reclamation plan approval was accepted as a complete filing (File No: SAMR/88-0003/DN585-1145N).
2. In compliance with the requirements of CEQA, the County entered into an agreement with the BLM (May, 1988) to prepare a joint EIS/EIR that would evaluate the mining reclamation/site plan in accordance with County requirements for implementation of CEQA, and to evaluate the Plan of Operations in accordance with Federal regulations for implementation of NEPA. The Draft EIS/EIR was prepared with full knowledge of these applications. That the Draft



EIS/EIR (Section 3.2.8, Reclamation) evaluated reclamation as part of the Proposed Action is unquestionable, as it is described as part of the Proposed Action. Portions of the proposed reclamation plan directly related to reclamation were included in the Draft EIS/EIR for environmental review. Unnecessary descriptions related to the site plan portion of the document, such as the configuration of mine pits and other background information, were omitted. However, the reclamation plan is on file and available for public review at the County of San Bernardino Environmental Public Works Agency.

3. The effectiveness of the proposed reclamation plan as filed in May, 1988 was considered throughout the course of the investigations and analyses completed for preparation of the Draft EIS/EIR. Additional reclamation measures were determined to be warranted during the environmental evaluation, and those measures were adopted as part of the Proposed Action. As such, the Proposed Action was modified through the environmental process. The improved reclamation plan was reflected in the Draft EIS/EIR (Section 3.2, Proposed Action). The Applicant has now updated the reclamation plan (Viceroy, 1990) in conformance with the recommendations in the Draft EIS/EIR, and submitted the final document to the BLM and County for their consideration.
4. Since the reclamation plan is specifically identified and described in the Draft EIS/EIR, and the impacts of the Proposed Action and effectiveness of measures to mitigate or avoid significant environmental effects were evaluated, the environmental process for the Castle Mountain Project has satisfied both the requirements and the intent of CEQA and NEPA.
5. The County's public hearing on the reclamation plan, as required by SMARA, will be held following review of the applications, EIS/EIR, and other information. The date and time of consideration will be publicly noticed.

#### Comment 04

1. One of the most significant issues with respect to a reclamation plan is whether it will require Viceroy to backfill the huge pits it excavates. That would not only eliminate the pits, but also the mounds of leached ore and overburden that will be left behind. However, under the "reclamation plan" vaguely outlined in the EIS/EIR, the pits would not be backfilled, but would be "left intact for potential future mining use should low grade ore in pit walls become economically desirable." Even where there was "no significant mineralization in its walls," a pit would be only partially backfilled. The pits would not be revegetated but the upper walls would be "stained to reduce color contrasts."

2. The overburden and heap leach piles would be "contoured" and revegetated in accordance with the yet-to-be-developed revegetation program. Although we are not told in the Draft EIS/EIR to what height the piles would be graded, pictures show the piles would be fairly long, with flattened tops and clearly visible from different vantage points. The Draft EIS/EIR refers to these piles as forming "mesas" at the base of the mountains.
3. Clearly the topography of the area would be changed considerably. Thus, if the project is "reclaimed" as currently proposed, there would be significant visual impacts, as well as potential impacts on wildlife habitat and safety. The EIS/EIR's conclusion to the contrary is simply not supported by the facts.

#### Response 04

1. Because of the configuration of the mine pits, height of the pit walls, and the coefficients of expansion of the overburden and ore, backfilling activities would not entirely eliminate the pits or the mounds of leached ore and overburden. The facts concerning the issue of backfilling were presented in the Draft EIS/EIR (Section 3.3.1.2, Alternative Overburden and Processed Ore Disposal). An explanation of the background information used for the discussion is presented in Section 3.3.1.2 (Castle Mountain Project Backfilling Constraints and Opportunities) of this Final EIS/EIR.
2. The proposed project design has been planned with consideration to visual resources. Mitigation measures were added to comply with the EMNSA Management Plan, based upon a BLM VRM analysis (see Draft EIS/EIR Section 5.8, Visual Resource). Overburden and heap leach pile contouring, as discussed in the Draft EIS/EIR, would be designed for visual purposes to "soften" the edges of the piles as viewed from nearby locations. The height of the overburden pile would be about 200 feet along its southern face and the height of heap leach piles is planned at 80 feet as stated in the Draft EIS/EIR (pages 3.2-12 and 3.2-15).
3. The visual renderings presented in the Draft EIS/EIR (Section 5.8, Visual Resources) demonstrate that the overburden and heap leach piles would be visible from different vantage points, as is the surrounding topography. As discussed in the Draft EIS/EIR, the onsite topography would be altered by the proposed activities. However, a topographic change in itself may not be considered a significant impact. The issue at hand is whether the changes would be in conformance with the established visual management objectives for EMNSA. Based upon the VRM process developed by BLM for use in assessing project contrast, as



summarized in Draft EIS/EIR (Table 5.8.1, Visual Resource Management, Project Contrast Rating), and review of the EMNSA Plan objective for best practices, the project would be in conformance and would not result in a significant effect.

4. See Section 3.3.2 (Mine Pit Backfilling Alternative Mitigation Measures Considered) of this Final EIS/EIR for a discussion of the changes that would occur to wildlife habitat and public safety that would occur as a result of backfilling. Based on the specific characteristics of the Castle Mountain Project in the context of the surrounding environment, the impact to visual resources, wildlife habitat, and public safety would not be significantly changed by backfilling the pits.

#### Comment 05

1. With respect to backfilling, it should be noted that the Division of Mines and Geology of the California Department of Conservation believes that the "quantity and quality" of the residual ore deposits left in the pits should be studied to determine whether backfilling could be done without affecting real future mining potential. (Memorandum from Dennis J. O'Bryant to Gordon F. Snow and John Bailey, May 1, 1989.) It would seem that before backfilling is ruled out as infeasible, Viceroy should at least have to demonstrate that the pit walls contain ore of a sufficiently high grade that it is reasonably likely that it will become economical to mine sometime in the foreseeable future.

#### Response 05

1. See Section 4.2.1.2 (Letter 1: State of California, Department of Conservation) of this Final EIS/EIR for response to Department of Conservation comments on backfilling.
2. The reclamation plan filed with the County in May, 1988 (Viceroy, 1988b) included a diagram depicting a generalized cross section at the Lesley Ann deposit (see Figure 1.8, page 17). That figure shows the mineralization extending beyond the current pit design. The mineralization is also shown and discussed in Section 3.3.1.2.1 (Known Mineralization and Potential Ore Reserves) of this Final EIS/EIR.

#### Comment 06

1. Vegetation and Wildlife Habitat - More than 33 percent of the vegetation on the site would be lost as a result of the proposed mining facilities and access roads. The EIS/EIR says that revegetation of portions of the site would occur through the project reclamation plan and natural processes. However, as the revegetation plan has not yet been developed, it is

impossible to evaluate to what extent it will restore the vegetation and wildlife habitat at the site, and natural revegetation is estimated to take from 30 to 60 years to achieve pre-disturbance levels, according to the Draft EIS/EIR. The California Department of Fish and Game states that revegetation programs in the desert have been "less than successful and may take a much longer time than the 30-60 year period stated in the document" (Memorandum from Pete Bontadelli to Gordon K. Van Vleck, May 5, 1989).

2. The EIS/EIR says this potential loss of vegetation and habitat is insignificant because it would affect only about 0.4 percent of the vegetation in the 340-square mile Lanfair Valley. A potential loss of 910 to 1,110 acres of vegetation and wildlife habitat in a National Scenic Area and Desert Conservation Area, including some critical desert tortoise habitat, cannot be considered "insignificant." The Department of Fish and Game clearly considers the potential loss significant and believes that Viceroy should be compelled to replace any habitat that is destroyed. We concur in the assessment that such a loss would be significant.

#### Response 06

1. See Section 4.2.1.2 (Letter 2: State of California, Department of Fish and Game) of this Final EIS/EIR for response to the DFG comments on revegetation.
2. While revegetation methods have been demonstrated as successful and cost-effective at other locations, it is desirable to determine the most suitable methods which would produce the best results, in the least time, on this site. The specifics of this program are best developed through implementation, in order to provide optimal revegetation success. However, criteria specified in the final reclamation plan (Viceroy, 1990) are iterated in Section 4.1.4.2.2 (Revegetation Goals) of this Final EIS/EIR. In fact, natural revegetation has successfully occurred without human assistance on disturbed areas in Lanfair Valley in 30 years in some areas and is discussed in Section 4.1.4.2 (Revegetation) of this Final EIS/EIR.
3. The significance of the loss of vegetation and wildlife habitat is determined in the Draft EIS/EIR based on specific criteria established for each issue. In its evaluation of potential effects, the Draft EIS/EIR concluded that no significant impact would occur to vegetation because the project would not:
  - Substantially affect a threatened or endangered species or its habitat.
  - Substantially diminish habitat for a plant species as stated in the Draft EIS/EIR (page 5.4-1).



No significant impact would occur to wildlife because the project would not:

- Substantially diminish the habitat for a wildlife species.
- Interfere substantially with the movement of resident or migratory wildlife species.
- Substantially affect a threatened or endangered species or its habitat, or a species officially proposed as threatened or endangered as stated in the Draft EIS/EIR (page 5.5-1).

These criteria for significance were adopted from the CEQA, in consultation with agencies and experts familiar with Mojave Desert flora and fauna and relate to resource sensitivity, quality, and quantity, as well as the duration of impact. Since the project would affect a relatively small area of vegetation and wildlife habitat (i.e., 890 acres), even when considered on a local Lanfair Valley scale (i.e., 217,600 acres), the logical conclusion is that the effect would not be significant. When considered on a large scale such as the EMNSA (which covers 1.5 million acres) and the CDCA (which covers 12 million acres of public lands), as referenced by the Commenter, it is clear that the relative impacts would not be significant.

4. The Proposed Action would not affect critical (BLM uses the term "crucial") desert tortoise habitat. The Draft EIS/EIR (Figure 4.5.1, Desert Tortoise Habitat and Proposed Access Roads) illustrates the position of the project relative to crucial desert tortoise habitats. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a further discussion of the desert tortoise.

#### Comment 07

1. Wildlife - Bighorn Sheep are known to inhabit the Castle Mountains and surrounding mountain ranges. While stating that the specific range of the bighorn is not known, the Draft EIS/EIR nevertheless concludes that the loss of 890 acres (really from 910 to 1,110) of forage area would not significantly affect the population. The DFG stated in its comments:

"The Castle Mountain range provides important bighorn sheep habitat and supports a sizeable population. Once this habitat is lost, the bighorn sheep population would be permanently affected and, unless transplanted, would be lost. This potential loss is inconsistent with Department efforts to expand and improve the desert bighorn sheep population in the State. The document fails to adequately address this potential loss and to define an action plan to prevent such loss from occurring."

2. Such a loss would clearly be a significant impact and the document provides no legitimate basis for concluding that it will not occur. In fact, there is guaranteed to be a loss of a

significant portion of this habitat at least during the 10-year operating life of the project and the minimum 30-year revegetation period. This interim loss is not addressed at all in the document.

3. In addition, the EIS/EIR does not address the impacts of the Searchlight Access Route on bighorn sheep at all. The DFG has stated that this road would bisect the migratory movements of bighorn sheep from the New York, Castle, Hart, and Piute Mountain ranges. The potential impact of this bisection on the sheep must be examined.

#### Response 07

1. See Section 4.2.1.2 (Letter 2: State of California, Department of Fish and Game) of this Final EIS/EIR for specific responses to these DFG comments on bighorn sheep.
2. The Draft EIS/EIR conclusion was based on the expected range of this small bighorn population from discussions with experts familiar with the area and established criteria for significance. While the Draft EIS/EIR acknowledged that the specific limits of this population's range is unknown, it provided the best available data indicating that they range over an estimated 47 square miles in the northern Piute Range and Castle Mountains. The project would disturb less than three percent of this available habitat and it would not disturb upper slopes where bighorn have been observed or their preferred habitat areas near water sources. No data or other specific information has been presented that would indicate that the project would significantly affect bighorn sheep.

#### Comment 08

1. The EIS/EIR also states that 60 percent of the existing mine shafts and adits on the site will be *removed*, yet inexplicably calls the impact on the bats, owls and ringtails who use those areas as habitat "short-term." If the habitat is being destroyed, it is hard to understand how that impact can be temporary. Similarly, we cannot agree that this impact can be termed insignificant simply because the noise from the project will have already driven many of the animals away. Clearly, there will be a loss in population and habitat of the affected animals that may be significant.

#### Response 08

1. For the Draft EIS/EIR analysis, the project site was visited by a recognized expert to assess the potential use of onsite mine workings as bat habitat. As discussed in the Draft EIS/EIR (Section 4.5.2.4, Bats), the site was determined inappropriate as habitat for most species.



The limited use could be accommodated by the numerous available shafts and adits. Therefore while the Proposed Action would eliminate about 60 percent of the mine shafts and adits, the remaining 40 percent were considered adequate to support the limited bat use. It has been demonstrated at other operations (i.e., the McLaughlin and American Girl mines) that animals, including bats, will relocate to other shafts/adits. The disturbance to these animals was therefore considered a short-term impact. It is recognized that the loss of the shafts and adits would be permanent. However, since additional habitat is available, no significant population loss for the species is expected. The Draft EIS/EIR recommended that the shafts and adits be examined to verify that the inhabitants had vacated prior to project activities (see Mitigation Measure No. 1 for bats, page 6.5-5).

2. Based upon the Draft EIS/EIR mitigation measure, each of the shafts and adits were subsequently inventoried. The inventories included investigations into the onsite mine shafts to determine the extent to which they are used as habitat for animals such as bats, owls, and ringtails. These investigations, completed during both winter and spring seasons, determined that there is no substantial use of the facilities by these species. No bat hibernation or maternity colonies were found in the area to be affected.

#### Comment 09

1. Several mitigation measures proposed to protect the desert tortoise, bighorn sheep and other wildlife involve monitoring of their effectiveness. Yet, the EIS/EIR nowhere states what will be done if the measures prove ineffective or how their effectiveness will be measured.

#### Response 09

1. All mitigation measures adopted as conditions will be monitored, in conformance with AB 3180 (Cal. Pub. Res. Code § 21081.6 *et seq.*), especially where operations activities could affect wildlife. However, this should not be confused with monitoring to determine effectiveness. The mitigation measures defined for each significant effect have been shown to be effective through their use at other operations, or have been determined by resource experts to be appropriate. The compliance monitoring program, as described in the Supplement, (Appendix E, Draft Mitigation Compliance Program) would be completed to ensure implementation of mitigation measures over time.

#### Comment 10

1. Finally, fencing of the access roads is proposed to protect tortoises from being struck by cars, yet according to the EIS/EIR, BLM would have the option of accepting, in lieu of fencing,

funds equivalent to the cost of providing the fencing, to be used for habitat enhancement, land acquisition, or studies to benefit the desert tortoise. Clearly the fencing cannot be considered a mitigation measure if it is not going to be mandated.

#### Response 10

1. The Draft EIS/EIR recommendation that the funds for desert tortoise fencing could be used for other purposes to benefit the tortoise was suggested so that the best benefit to the species could be realized. Compensating for an impact by replacing or providing substitute resources or environments is consistent with CEQA as a method of mitigating potential environmental impacts. "Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified *if one has been selected*" (CEQA Guidelines, Section 15126(c)) (emphasis added). In this case, either measure would satisfy the required mitigation.
2. See also Section 4.2.1.2 (Letter 2: State of California, Department of Fish and Game, Response No. 19) of this Final EIS/EIR.
3. It should be noted that, as a result of public comment on the Draft EIS/EIR, the proposed access route has been relocated to avoid travel through Category 1 desert tortoise habitat (see Supplement Section 3.2.1, Mitigated Searchlight Access Route). Desert tortoise fencing is therefore unnecessary.

#### Comment 11

1. Hazardous Wastes - Generation, treatment, storage and disposal of hazardous wastes are regulated by the State Department of Health Services (DHS). We are informed by DHS that if Viceroy is mining old mine tailings rather than new areas, the whole operation would be regulated by DHS because mine tailings are hazardous waste. In any event, once the mine has stopped operating and the leach pads and solution ponds are being cleaned up, DHS would regulate the process. This is not discussed in the EIS/EIR.

#### Response 11

1. No old tailings are proposed to be mined as part of Castle Mountain Project.
2. Project decommissioning will be regulated by the BLM and RWQCB, not DHS.



3. DHS would be involved only if the spent ore on the heap leach pads or the overburden materials were considered to be hazardous wastes. Since the extractable levels of metals of concern to the State are much less than the Soluble Threshold Limit Concentrations, the materials would not be considered hazardous. The Draft EIS/EIR (page 3.2-53) correctly stated that the RWQCB would regulate procedures for decommissioning the leach pads and the solution ponds.

#### Comment 12

1. In addition, even if the heap leach process itself were not regulated, other activities at the site might be. For example, used motor oil, a hazardous waste, would be stored onsite. If the company were to store such waste for more than 90 days it would need a permit from DHS. The company also plans to "detoxify" oils and solvents. Depending on what is meant by the word, that could constitute "treatment," which also requires a permit from DHS. Yet, according to the distribution list, the EIS/EIR was not circulated to DHS. More detailed information is needed so that it can be determined whether these activities are regulated by DHS.

#### Response 12

1. It is recognized that the Applicant and Operator must obtain required permits from numerous agencies for activities that are specifically regulated. Adherence to existing applicable codes and regulations is necessarily assumed in an environmental impact evaluation. A list of the major permits and approving agencies was included in the Draft EIS/EIR (Appendix B, List of Permits and Approvals).
2. Copies of the Draft EIS/EIR were sent to the State Clearinghouse for distribution to State agencies, including the DHS, in accordance with CEQA. The DHS was notified of the availability of the Draft EIS/EIR by the State Clearinghouse. No comments were received from DHS during the public review period.
3. In response to this comment, a copy of the Draft EIS/EIR was subsequently sent directly to DHS by the environmental consultant. No comments were received.

## LETTER 4: STATE OF CALIFORNIA, STATE LANDS COMMISSION

Comment 01

1. Section 6.5.1.2, top of page 6.5-3, states: "*Netting*: Measures to discourage birds and bats shall include covering with netting with close-spaced (1-inch or less) mesh, or liner material." Section 7.3.4 suggests that impacts to wildlife from netting will be "essentially eliminated."
2. The document should examine whether wildlife would be caught or trapped in such material and should discuss why the potential effects on wildlife caught or trapped in the netting are acceptable, and explain how such animals could be released from the nets. It should also suggest, for public review, appropriate parameters of a monitoring program and the appropriate threshold to determine that nets should be replaced with liners.

Response 01

1. The Draft EIS/EIR included the cited requirements for "1-inch or less mesh" netting to avoid the potential for birds to become entangled. While the issue of potential entanglement has been considered, it should be noted that use of such netting is widely accepted by regulatory agencies and employed at many other mines. Netting is also commonly used at fish hatcheries to exclude predatory birds, with no apparent entanglement problems. However, the mitigation measure for netting has been revised to require replacement if entanglement becomes a problem, as described in Section 3.2.1 (Additional Mitigation Measures) of this Final EIS/EIR.
2. The area to be covered by netting will be approximately 250 feet by 365 feet. Much of this area would be accessible from a "cherry picker," which could be swung out over the net, to lower someone to free an entangled bird or bat. Also, since the netted basin will usually be dry, someone on a tall step ladder could reach up beneath the central portion of the netting to free an entangled bird or bat from below.

Comment 02

1. Section 3.2.4.3.4, bottom of page 3.2-17, states: "The ponds would also be covered with netting or other suitable covering acceptable to BLM to deny access to birds and bats."
2. In addition to BLM, the appropriate methods of pond covering must, in our view, also be acceptable to the U.S. Fish and Wildlife Service and the California State Department of Fish and Game.



Response 02

1. Comment noted. BLM will coordinate final approvals for netting materials with FWS and DFG.

Comment 03

1. Section 3.2.5.7.4, top of page 3.2-33, states: "A spill prevention and preparedness plan would be prepared and submitted to the BLM and County."
2. We believe that it is important for such a plan to be included as a part of Viceroy Gold Corporation's proposal and for its effectiveness in mitigating specified adverse environmental effects be analyzed in this document.

Response 03

1. Preparation and submittal of a spill prevention control and countermeasures plan is required by the County in accordance with State law. That such a plan is required as a mitigation measure prior to initiating operations which could affect soils or ground water is adequate for purposes of the Final EIS/EIR.

Comment 04

1. Section 3.2.7.5.2 references the Applicant's withdrawal of its application to the State Lands Commission for up to eight exploratory drilling holes in Section 36, T. 14N., R. 17E., SBM.
2. If and when the Applicant resubmits an application for exploratory drilling to the Commission, the Commission may require supplemental environmental documentation to be prepared.

Response 04

1. Comment noted.

Comment 05

1. Section 2.4 Regulatory Compliance should include the State Lands Commission which must issue a permit for Well W-4, Figure 3.2.9 which was drilled without authorization from the Commission. The Applicant has been notified that the Commission will rely on the EIR/S in its considerations. A statement to this effect should also be added to Section 2.2, Intended Use Of The EIR/S.

Response 05

1. Comment noted. The cited well was inadvertently drilled a short distance inside a school section due to a survey error. The State Lands Commission was notified of this incident by the Applicant in October 1987, shortly after the error was discovered by the Applicant's survey crew.
2. The Draft EIS/EIR (Section 2.2.3, Other Agencies) identifies the State Lands Commission as an agency that would use the document in its consideration of waterwell drilling and road and water pipeline rights-of-way. The State Lands Commission is also listed in Draft EIS/EIR (Appendix B.1) as the agency responsible for permitting wells on State lands.





#### 4.2.1.3 LOCAL AGENCIES

Letter 1: Clark County, Department of Comprehensive Planning

Letter 2: County of San Bernardino, Environmental Health Services

Letter 3: San Bernardino County Museum





## LETTER 1: CLARK COUNTY DEPARTMENT OF COMPREHENSIVE PLANNING

Comment 01

1. *[Section] 3.2.6 Project Traffic and Site Access* - The majority of commuting traffic generated by the employees of the mine will be coming from or returning to locations in Clark County, Nevada. The preferred alternative for access leads directly from the project site to Searchlight. The document assumes that most employees will reside in Searchlight and other Nevada locations. In order to minimize the impact on Piute Valley Desert Tortoise populations, the Castle Mountain Project proposes the use of shuttle buses for their employees. Whether busing is used for employee access to the site or not, the 312 or 108 Average Daily Traffic (ADT) count is a significant increase from that of today. An additional factor that has not been considered is the potential for an incremental increase in ADT due to the improvement of either the Ivanpah or Searchlight Access Routes. Significant areas of private land are interspersed with BLM land throughout the Lanfair Valley. An improved roadway entrance to the valley from the north could help to create an increased demand for access on the part of residents and sightseers alike. On page 3.2-45 an operations viewing area and interpretive/information site is proposed but there is no estimate of the traffic generated by this attraction. The additional ADT will affect Clark County Road A68p even if the Ivanpah Access Alternative were selected as the general public seeks to reach community services by the closest route. In either case, the upgrading of the road should include pavement adequate to handle the loads of the large trucks required for construction and other activities over the life of the project. Upgrading of the routes by grading and gravelling with turnout and signage would seem to be inadequate for the purposes of the roads and raises questions of liability for accidents on narrow roadways. The company plans to improve public rights-of-way, so private haulage roads are not practicable. Taxes from the project, located in California, will not be available to improve or maintain Clark County roads. Viceroy Gold Corporation should be required to pave the road to Searchlight and maintain it throughout the life of the project, either directly or through appropriate contributions to Clark County.

Response 01

1. It should be recognized that an increase in 108 ADT is approximately equal to the traffic that is generated from 11 single family residences (ITE, 1982). Therefore, although this may be a large increase, as compared to 10 or 20 ADT, the relative traffic is very low.



2. The Draft EIS/EIR (Chapter 8.0, Cumulative Impacts) considered the potential for future development of private lands in Lanfair. Since there is no economic incentive for residential development in this area and County code restricts development to a minimum parcel size of 40 acres, no substantial development of Lanfair Valley is expected. There is already good access to the valley from the northwest (Ivanpah Road) and south (Lanfair Road), so upgrading of the Mitigated Searchlight Access Route would not be expected to provide significant additional incentive for recreational or residential access.
3. The Hart Mining District is a recreational attraction. While the specific traffic attributable to this activity is unknown, the traffic would represent a portion of the ADT figures shown in the Draft EIS/EIR (Figure 4.5.1, Desert Tortoise Habitat and Proposed Access Roads). It is expected that these sightseers would continue to visit the area and include in their travel a visit to the project interpretive/information site.
4. Upgrading of the Mitigated Searchlight Access Route would be completed according to road specifications approved by BLM. Road maintenance will be the responsibility of the Applicant and would not therefore be an economic burden on Clark County. Paving of this access route is considered inappropriate by BLM.

Comment 02

1. In Section 5.11.2, Population, a bus and van pool service is proposed from the Las Vegas Valley to the project site, with pickups in the Las Vegas Valley and near Searchlight. Pickup points should be set aside for car parking during the shift, with adequate spaces provided and access to public rights-of-way that will not impede other traffic near the pickup points. It should be the responsibility of the Viceroy Gold Corporation to construct and maintain these sites in the same way that they propose to improve and maintain segments of the access roads.

Response 02

1. Comment noted. The preferred local employee pickup point selected is the Walking Box Ranch, which is owned by the Applicant.

Comment 03

1. *5.11.1.2 Population* - Potential population impact is underestimated. The Draft EIS/EIR compares the worst-case situation, in which 800 persons might move into the Searchlight area, with the impact of such a move on the overall population increase in Clark County. While it is true that this increase would represent only 0.2 percent of the anticipated growth in

## Clark County

Clark County between the years 1990 and 2000, it represents an increase of 127 percent in the Searchlight population, from 532 to 1,382. Even if only a fraction of the mine's employees move into Searchlight, substantial development of infrastructure will be required. The Searchlight water system is at capacity and the National Guard had to provide drinking water in tank trucks last summer. Sewerage, schools, streets, and police protection are among the services that will require fundamental extensions and improvements.

2. The Viceroy Gold Corporation should recognize its financial responsibility to develop needed infrastructure, physical and social, in the areas in which its employees live. Since the mine is to be located in San Bernardino County, California, no direct taxes will accrue to Clark County, Nevada, the projected home of the mine employees. This imbalance should be rectified before the proposal is approved.

Response 03

1. In the review of local communities that could accommodate additional growth, it was recognized that housing and public facilities in Searchlight are limited. Based on this, and the fact that mining employees' wages are generally greater than wages of comparably skilled workers in other industries, it was determined in the Draft EIS/EIR that the majority of employees would live in communities in the Las Vegas Valley, such as Henderson and Boulder City, and in the Laughlin area, where adequate housing and services exist. No substantial development of housing or infrastructure in Searchlight is therefore expected.
2. While it is recognized that for the Castle Mountain Project, employment taxes and property taxes will accrue to the State of California and San Bernardino County, it is also expected that indirect revenues will accrue to Clark County, Nevada, since many of the supplies and services needed for the project would be purchased from local suppliers in the Las Vegas metropolitan area.



## LETTER 2: COUNTY OF SAN BERNARDINO, ENVIRONMENTAL HEALTH SERVICES

Comment 01

1. In reviewing the Castle Mountain Project Draft EIS/EIR language under Section 5.7.1.3, I have concern that current wording may inadvertently lead them to the creation of a new illegal mine dump. More specific language in the EIS/EIR documents may help reduce this possibility.
2. Specific language under Section 5.7.1.3 on domestic and non-hazardous industrial waste might also assist the Applicant's planning for the very significant costs of such non-hazardous waste disposal in remote areas of the county.
3. Inexplicably, 5.7.1.3 seems to promote reuse/recycling for hazardous waste only. This denies the reality of growing and stable markets for many non-hazardous waste commodities. Reuse/recycling for certain non-hazardous wastes may help contain costs better than hauling all such wastes to a legal landfill offsite, or creating a legal landfill onsite. At a minimum, the Project should have a reuse/recycling written policy and procedure for *all* wastes so that where cost effective, wastes are diverted from landfill burial.
4. To help reduce an illegal dump here, Section 5.7.1.3 should specify that all non-hazardous wastes be stored onsite in 20 cubic yards or larger roll-off refuse bins (or equivalent) and transferred at least weekly to a permitted Class III landfill. The identity of such landfill(s) should be stated.

Response 01

1. The Draft EIS/EIR requirement that hazardous wastes be recycled or removed to appropriate landfill/treatment facilities is not intended to preclude consideration for recycling of non-hazardous materials. While it is recognized that recycling materials may be preferable to Class III landfill disposal the reality of recycling is most often dependent upon economics. The Applicant should certainly consider recycling of materials for which there is a market demand. However, the types of waste materials for which there is market demand (i.e., wood, metal, bottles, aluminum cans, and waste paper) are not expected to be either produced in sufficient quantities or desirable enough for recycling to be feasible. The requested policy statement on recycling is accepted and has been added as a mitigation measure in Section 3.2.1 (Additional Mitigation Measures) of this Final EIS/EIR. Also in this regard, the Applicant has recently reached an agreement with a recycler to accept mine equipment tires.



## County of San Bernardino, Environmental Health Services

2. Because of the low volumes of most wastes, it may not be necessary to require weekly transfer to landfills. Storage in 20-cubic yard bins is, however, acceptable.
3. See Response No. 02 regarding landfill locations.

Comment 02

1. The major unanswered issue as to non-hazardous waste disposal is ultimate disposal. There are *no* Class III landfills conveniently available to the project in California. Nevada may (as most states) severely restricts out-of-state waste importation in order to conserve its landfill space. The nearest legal California sites are at Needles and Baker.
2. The city of Needles operates their landfill primarily for the benefit of their citizens and nearby county residents who formerly paid land use waste fees through the County Solid Waste Management Department (SWM). The City appears to be under no obligation to accept the Project's wastes. The City should be contacted by the Applicant directly in this matter for details.
3. SWM operates the Baker landfill for that area's land owners paying land use waste fees. The Project's patented lands appear to be outside that area paying such fees. The Project's leased BLM lands may be exempt from such fees. Therefore, the Project's right to use the Baker site (or any SWM desert landfill) might be absent. Also, this landfill might soon become a transfer station. Specifics should be obtained from SWM by the Applicant.
4. Under 5.7.1.3, paragraph 3 in the Draft states: "At some point during the project life, the Applicant may request approvals to dispose of certain non-hazardous wastes within the project overburden pile. The types of materials disposed in this manner would include tires, scrap metals, and wood."
5. This statement is vague, extremely misleading, and hostile to the recycling ethic the County is trying to establish. The statement should be deleted in its entirety.
6. Such "approvals" it references are not at all minor. They are complex and include all typical EIS/EIR due process considerations *and* approvals from the Air Pollution Control District, Regional Water Quality Control Board, and the California Waste Management Board. Since there is some risk of redundant EIS/EIR procedures and needless extra expense to the Applicant to site a future Class III landfill here, the Applicant may benefit by including it in its



application *now* if onsite non-hazardous waste disposal is assumed or anticipated as a probability. The Applicant is done a disservice if led to believe any "short cuts" exist to getting onsite waste disposal approval.

7. A new law (AB 2448 - Eastin - 1987), Government Code 66796.22 mandates substantial financial reserves (or equivalent) be set aside for closure and postclosure maintenance of landfills. The Applicant should carefully consider the financial impact of these requirements prior to committing to an onsite landfill.

#### Response 02

1. Comments noted. The Draft EIS/EIR statement that approvals for onsite disposal of non-hazardous wastes may be requested by the Applicant is factual as evidenced by the reasons stated by the Commenter on landfill disposal restrictions and capacity problems. Since few landfills are available and long haul distances would be required, onsite disposal may be desirable. It is recognized that proper procedures would need to be followed to obtain permits for onsite waste disposal. Since the Applicant has not requested such approval at this time, the Draft EIS/EIR simply includes this as a potentially foreseeable event in its assessment of environmental effects (see Section 5.7.1.3, Domestic and Industrial Waste Disposal).
2. The Applicant has contacted the County-operated Class III landfill located in Barstow, California. The landfill operator has indicated that that landfill will be able to accommodate the anticipated volumes of non-hazardous wastes generated by the project.

#### Comment 03

1. Paragraph 3 of 5.7.1.3 then concludes with references to "tires, scrap metals, and wood" burial. As earlier discussed, the reuse/recycling potential for such items should first be explored. Tires, scrap metals, and wood are among those commodities with greatest potential for reuse/recycling.

#### Response 03

1. Comment noted. See Response No. 01.

#### Comment 04

1. In reference to some liquid waste disposal items (and also mobile home/office set-downs), the Applicant should be reminded to check with the County office of Building and Safety for necessary permits/approvals for these and other items.

Response 04

1. Comment noted. The Applicant will be required to obtain required County permits for each aspect of the project.





## LETTER 3: SAN BERNARDINO COUNTY MUSEUM

Comment 01

1. The Castle Mountain Project DEIS/EIR fails to adequately address impacts to significant nonrenewable paleontologic resources.
2. The statement 4.2.6 #2 describes hydrothermally-altered clays. However, it does not discuss impacts to the Tertiary lacustrine sediments that have been reported from within the project boundary and that are noted on the paleontologic sensitivity map of San Bernardino County.
3. The Tertiary lacustrine sediments should receive a field assessment by a qualified vertebrate paleontologist who should then develop a "Plan to Mitigate Impacts to Paleontologic Resources." The Plan should include, but not necessarily be limited to, the following:
  - Full-time monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. The monitor should be equipped to salvage fossils as they are unearthed to avoid construction delay and to remove samples of sediments which are likely to contain the remains of small fossil mammals. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. The most cost-efficient method of salvages of small fossils is to remove sediments containing the fossils to stockpiles offsite. The fossils can be removed by screen washing elsewhere while excavation continues on site.
  - Preparation of recovered specimens to a point of identification, including washing of sediment to recover small vertebrates. This will allow the fossils to be described in a report of findings and reduces the volume of matrix around specimens being stored.
  - Curation of specimens into a museum repository with retrievable storage.
  - Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency, signifies completion of the Plan to Mitigate Impacts to Paleontologic Resources.

Response 01

1. Surface outcrops and drill core within the areas proposed for mining have been mapped and studied. Data are contained in a set of maps, structure sections, drill hole logs, reports, and stratigraphic columns. These data represent the most complete geologic study, published or unpublished, which has yet been made of the project area.

2. There are virtually no paleontologic resources within the areas proposed for mining and related operations. Fossils were actively searched for during all phases of mapping and core logging as tools for correlation and paleoenvironmental interpretation. However, no fossils of vertebrate, invertebrate, or plant origin were found.
3. The Paleontologic Sensitivity Map of San Bernardino County, which denotes two areas of "potential paleontologic sensitivity" within the Castle Mountains project area is in error regarding potential paleontologic resources. The two areas, located in Sections 13 and 24, T14N R17E, contain *no* outcrops of sedimentary rock. Soft, clay-rich beds in these sections are hydrothermally-altered ashfall and ashflow deposits. Previous studies inferring these beds to be lacustrine deposits are therefore incorrect. A lacustrine interpretation may have been based on the false assumption that high clay content, thin bedding, and parallel and cross-stratification indicate subaqueous deposition. Post-1970 advances in volcanology have shown such an assumption to be wrong. High clay content is a function of hydrothermal alteration, while thin bedding and parallel lamination are ashfall structures. Cross-stratification resulted from ground surge processes related to pyroclastic flow. These clay-rich deposits, mapped as units M1tl and M1tbl, are entirely volcanic in origin and represent depositional environments extremely inhospitable to animal or plant life. No fossils of any type were discovered during the course of recent work, and none has been reported from Sections 13 and 24 in previous studies.
4. Quaternary to Upper Tertiary sediments and weakly-indurated sedimentary rocks *do* occur in subsurface as overburden above ore deposits in Section 24. These deposits were studied in detail in core and are shown in core logs and cross sections prepared as "Quaternary colluvium" and "New York Conglomerate." Again, in spite of careful search, virtually no fossils of any type were found in these units, which consist of slope-deposited colluvial breccias and conglomerates and fluvially-deposited conglomerates and minor sandstones. No lacustrine deposits or clay-rich sediments are present. Sedimentologic data documenting these interpretations are contained in a series of drill hole logs.
5. Therefore, since no lacustrine sediments or paleontologic resources exist in the areas to be disturbed, a paleontologic monitoring and recovery program is not necessary.



Comment 02

1. The discussion of mitigation of impacts to woodrat middens is adequate in the Draft EIS/EIR.

Response 02

1. Comment noted.

#### 4.2.2 SUPPLEMENT RESPONSES







#### 4.2.2.1 FEDERAL AGENCIES

- Letter 1: U.S. Department of the Interior, Bureau of Land Management  
(Stateline Resource Area)
- Letter 2: U.S. Department of the Interior, Geological Survey
- Letter 3: U.S. Environmental Protection Agency







LETTER 1: U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT  
(STATELINE RESOURCE AREA)

Comment 01

1. Inasmuch as the relocation of the access road on the Nevada side is a key mitigation measure, the Desert Tortoise Habitat map page 3-2 should show the Nevada habitat and the two access roads.

Response 01

1. Comment noted. Supplement Figure 3.1 (Desert Tortoise Habitat, Interim Map, January, 1989) was intended to show the position of the project site in California with respect to desert tortoise habitat. The figure in the Supplement that was prepared to depict the potential effect to desert tortoise habitat in Nevada is Figure 3.6 (Northern Piute Valley Desert Tortoise Population Densities) which shows the details of the Mitigated Searchlight Access Route in relation to Piute Valley Category 1 tortoise habitat in Nevada.

Comment 02

1. The analysis and mitigation measures that have been worked out in this process balance mining and wildlife/environmental concerns.

Response 02

1. Comment noted.



## LETTER 2: U.S. DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY

Comment 01

1. Neither the Draft [EIS/EIR] statement nor the Supplement to the draft fully considers all the beneficial effects or costs of backfilling the pits created by mining operations. Environmental benefits would include reduction of modified surface drainages and areas of required revegetation, return of the pit areas to productive uses, and a decrease in the area impacted by spoils storage.

Response 01

1. See Section 3.3.1.2 (Castle Mountain Project Backfilling Constraints and Opportunities) of this Final EIS/EIR for a discussion of the potential beneficial effects and costs of backfilling.
2. It is recognized that surface flows from occasional precipitation would enter the mine pits. However, as the mine pits are located at the apex of a drainage basin, the volumes diverted into the pits would be minimal, as shown in Figure 4.8 (Watershed Area Affected by Castle Mountain Project Mine Pits) of this Final EIS/EIR. The catchment area affected by the pits would be approximately 340 acres, of which 135 acres would be occupied by the mine pits. Water entering the pits would not be lost, but would support vegetation on the benches and floor of the pits. Some of the surface water collecting in the pits would undoubtedly enter the ground through fractures in the rock walls and benches of the mine pits. The benefit to be derived from reestablishing surface flow through the mine pits is therefore questionable.
3. If backfilling were planned, the overburden could be stacked higher to reduce surface disturbance, and therefore reduce the size of the area that would require revegetation. The following design would apply:
  - The present overburden pile is designed to cover about 300 acres. The western portion of the pile would still be needed to accommodate protore that is planned to be stacked for future processing. The acreage of this area could not be reduced even if backfilling were planned.
  - Overburden deposited on the more easterly portions of the overburden pile could be placed higher on the northeast dump surface (up to the 4,420-foot elevation) without adding excessive truck haul times (i.e., no increase in mining costs). This would reduce the overburden disturbance area by 20 acres. If the material were placed as high as possible, irrespective of increased mining costs, the total overburden disturbance area could be reduced by about 30 acres (the limiting factor to this placement would be the maximum 10 percent grade of the haul road, which is needed for safety).

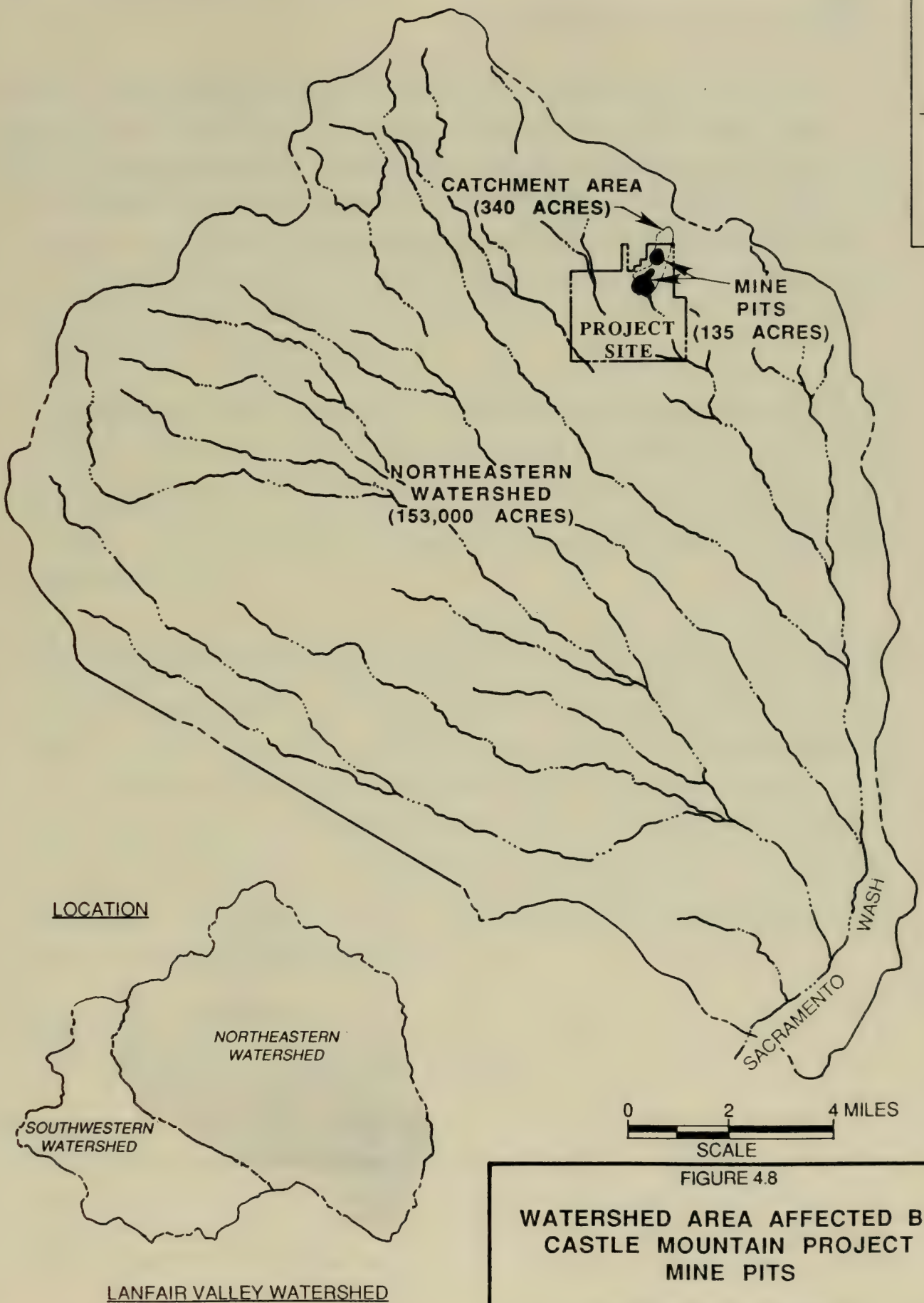


FIGURE 4.8

**WATERSHED AREA AFFECTED BY  
CASTLE MOUNTAIN PROJECT  
MINE PITS**

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.



Therefore, were backfilling required as a mitigation measure for reducing surface disturbance and revegetation requirements, it could reduce onsite project disturbance by between about 2.3 and 3.4 percent. This does not appear to be a significant reduction in surface disturbing effects and would not warrant adoption of mine pit backfilling. It would also delay revegetation of the overburden area.

## LETTER 3: U.S. ENVIRONMENTAL PROTECTION AGENCY

Comment 01

1. The Environmental Protection Agency (EPA) has reviewed the Supplement to the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) for the Castle Mountain Project, a proposed heap leach gold mine within the East Mojave National Scenic Area. The initial Castle Mountain Project EIS/EIR was issued in Spring 1989. Our comments on the Supplement are provided pursuant to the National Environmental Policy Act and Section 309 of the Clean Air Act.
2. The Supplement to the DEIS/EIR discusses modifications in the Proposed Action and expands analysis of alternatives and cumulative impacts. One of the important regulatory changes which has affected project design is protection of the desert tortoise under both State and Federal Endangered Species acts. Additionally, the Supplement presents a draft Monitoring Compliance Program which has been developed largely as a response to recent State legislation (AB 3180).
3. When EPA submitted comments on the Castle Mountain Project DEIS/EIR in May 1989, the Proposed Action and impact statement were assigned a rating of EC-2, "environmental concerns--insufficient information." This rating has been retained for the Supplement as well, since the proposed revisions affect only a few aspects of the much larger project. However, we do note that in several respects the Supplement improves documentation of impacts and includes changes in project design or proposed mitigation measures which could lessen adverse environmental impacts. We are encouraged that each of the three proposed project changes--access road rerouting, redesign of the process solution storage, and redesigned onsite power supply and dust suppression equipment--has the potential to reduce adverse impacts. Our detailed comments are attached.

Response 01

1. See detailed responses to each of these comments below.

Comment 02

1. *Desert tortoise protection.* The Supplement states that because the main access route originally identified in the DEIS/EIR ("Searchlight Access Route," using Clark County Road) would have traversed high value (Category 1) desert tortoise habitat, a "Mitigated Searchlight Access Route" avoiding this habitat has been proposed. Subject to County approval, the Clark

County Road would be closed to traffic and reclaimed. A second access route--Ivanpah Road, which also includes Category 1 tortoise habitat--was originally envisioned for some equipment and supply deliveries, but under the new mitigated access plan "no project traffic would be directed through the Ivanpah Valley Category 1 desert tortoise habitat" (page 3-14).

2. While the revised plan for the Searchlight route appears to improve tortoise habitat protection, we are concerned that the Ivanpah route would still be open and could be used for work commutes and deliveries. Ivanpah Road appears to be a more direct route than the "mitigated Searchlight" alignment for traffic from the Las Vegas area, which is within commute distance. Moreover, we note that as part of the revised mitigation measures, fencing in crucial habitat along Ivanpah Road would no longer be required (page 3-21). What measures are anticipated to ensure that project traffic will in fact be directed along the new Searchlight route? If control over routes is limited, effective mitigation measures to protect the tortoise from traffic along Ivanpah Road should be required.

#### Response 02

1. Subsequent to the preparation of the Supplement, FWS and BLM concluded that given the low density of tortoises along the northernmost 4.3 miles of the Mitigated Searchlight Access Route, it would be appropriate to upgrade existing alignment in this area, rather than construct the new 4.3 mile segment. The revised alignment, termed the "Mitigation Access Route," is shown in Figure 3.3 of this Final EIS/EIR.
2. The distance to the site from south Las Vegas is nearly identical using either the Ivanpah Route or the route via Searchlight. The distance to the site from the residential areas of southeast Las Vegas and Henderson, where the majority of employees are expected to live, is less using the route via Searchlight. The Mitigated Access Route is therefore expected to be the route preferred by employees.
3. The mitigation measure designed to direct project traffic along the Mitigated Access Route is to provide project-sponsored bus/van pooling. As explained in the Draft EIS/EIR (page 3.2-35), other mines that provide bussing report an employee participation rate of about 80 percent. Other traffic, such as for deliveries of supplies, would be directed to use that access. In addition, the operator would limit onsite parking.



Comment 03

1. *Process solution storage.* In our earlier comments on the DEIS/EIR we requested consideration of smaller ponds or enclosed storage tanks to hold the process solutions, and we commend you for including these two design alternatives in the Supplement. Considering the advantages of enclosed tanks for preventing poisonings of wildlife and reducing water loss through evaporation, we encourage you to give this alternative serious evaluation. The FEIS should be more specific on water savings and also should elaborate on the use of the "emergency" solution storage pond which accompanies the storage tanks. The discussion on page 3-26 states that this pond would serve for "backup storage" and would require netting. How frequently would this storage use occur; what type(s) and volume of solution would be held here? If netting is needed for this "backup storage," do the planned dimensions permit secure, effective cover?

Response 03

1. See Section 3.1 (Final Project Design) of this Final EIS/EIR document for the final conceptual design for the solution storage tanks.
2. The expected water savings through use of the solution storage tanks would be about 10 acre-feet per year, based upon a solution pond evaporation surface area of 1.7 acres, and six feet of annual evaporation.
3. The emergency (or backup) storage basin is not expected to be used on a regular basis. The basin would only receive diluted process solution from a significant precipitation event. The total capacity of the emergency storage basin is currently designed as 5.5 million gallons, as explained in Section 3.1 (Final Project Design) of this Final EIS/EIR, which is sufficient to accommodate a 100-year, 24-hour rainfall event. The minimum required storm event for solution to enter this basin is 1/2 inch of precipitation, which would result in approximately 100,000 gallons of diluted solution entering the emergency storage basin. Based upon the water make-up requirements (see Draft EIS/EIR page 3.2-23), this solution would be used in about six hours. Since 1/2 inch of precipitation would be rare for a single event in this environment, the presence of solution in the emergency storage basin would be infrequent.
4. The type of solution held in the emergency storage basin would be diluted process solution. The degree of dilution would be a function of the rainfall event. The maximum concentration would be slightly less than the standard solution used (about 160 ppm).

5. Although the emergency solution storage area would rarely be used, it would be covered with netting designed to exclude birds and bats. The storage area dimensions of 252 feet by 365 feet pose no unusual problems for securing an effective netting cover.

#### Comment 04

1. *Air Quality.* EPA's comments on the initial DEIS/EIR noted several problems with the air quality analysis and potential adverse impacts, including potential violations of state ozone standards, difficulties in meeting State and Federal PM-10 standards, and high nitrogen oxide emissions. The Supplement proposes several project changes--substitution of propane-fired electrical generators (resulting in a reduction of nitrogen dioxide) and use of baghouses to control fugitive dust from ore processing operations--the overall effect of which is unclear. We note that revised calculations of particulate emissions predict overall a slight rise over earlier estimates, despite the use of baghouses.
2. Generally, the Supplement does not contain information which satisfactorily addresses our earlier questions and concerns. We request that the Final EIS/EIR respond in detail to questions stated in the May 1989, comment letter regarding air quality impacts modeling and analysis. The unresolved issues regarding ozone impacts, PM-10 background levels, and PSD are especially critical. Please also explain the changes in methodology for emissions calculations (referenced in the Supplement on page 3-29).

#### Response 04

1. The Supplement was not intended to address each of the detailed comments on the Draft EIS/EIR. Responses to EPA's comments on the Draft EIS/EIR can be found in Section 4.2.1.1 (Letter 6: Environmental Protection Agency) of this Final EIS/EIR document.
2. The revised air quality analysis for the Castle Mountain Project includes additional mitigation measures which are intended to reduce project air emissions. Propane-fired electrical generators equipped with catalytic converters will replace the diesel-fired electrical generators originally proposed. As a result, NO<sub>2</sub> emissions will be significantly reduced. Additionally, baghouses have been incorporated into the project design for the purpose of controlling fugitive dust emissions. Although the baghouse manufacturer guarantees a control efficiency

of 99.9 percent,  $PM_{10}$  emissions have been calculated assuming 99.0 percent control efficiency. This conservative assumption assures a worst-case assessment of  $PM_{10}$  emissions.

3. Although mitigation measures will reduce *actual*  $PM_{10}$  emissions below levels in the original project design, *estimated* emissions for the project were shown to be slightly higher in the Supplement than in the Draft EIS/EIR analysis. Increases of estimated  $PM_{10}$  emissions have resulted from using the updated version of AP-42 (Section 11.2.3), which was revised in September, 1988. Use of the new EPA equation results in  $PM_{10}$  emissions several times higher than values calculated using the earlier version. This calculation methodology for determining emissions from the Castle Mountain Project has been reviewed and approved by the San Bernardino County Air Pollution Control District.





#### 4.2.2.2 STATE AGENCIES

Letter 1: State of Arizona, Department of Mines and Mineral Resources

Letter 2: State of California, Department of Justice, Attorney General's Office

Letter 3: State of California, Regional Water Quality Control Board (Region 7)

Letter 4: State of Nevada, Governor

Letter 5: State of Nevada, Nevada Legislature







LETTER 1: STATE OF ARIZONA, DEPARTMENT OF MINES AND MINERAL  
RESOURCES

Comment 01

1. This letter is to voice my continuing support for Viceroy Gold Corporation's proposed mining project, known as Castle Mountain.
2. Viceroy's mitigating efforts in conjunction with their proposed operation would improve the area, access, and be a model mining operation. Their efforts to protect the environment and wildlife have gone far beyond what could be reasonably expected. Their willingness to monitor the area and take further protective steps, if necessary, are on record. It is time to let them develop the mining property so all the improvements can be paid for. No one, not any level of government, nor the environmental groups can finance improvements without a source of wealth. The new wealth created by Viceroy Gold Corporation from this project is what will allow them to protect the desert tortoise and other animals for all of us. Any further delays would be intolerable.

Response 01

1. Comment noted.



LETTER 2: STATE OF CALIFORNIA, DEPARTMENT OF JUSTICE,  
ATTORNEY GENERAL'S OFFICE

Comment 01

1. These comments on the Supplement to the Draft EIS/EIR prepared for the Castle Mountain project are submitted on behalf of John K. Van de Kamp, Attorney General of the State of California, acting pursuant to his powers under the California Constitution and the California Government Code to protect the environment of California. These comments are not offered on behalf of any other State agency or official.
2. As stated in our previous comments, because the EIS/EIR is intended to be used by the Bureau of Land Management (BLM) and the County of San Bernardino to fulfill their environmental review obligations under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively, this office has analyzed the supplement under both statutes.
3. Overall, the Supplement does not address any of the issues raised previously by the Attorney General.<sup>(1)</sup> Therefore our previous comments stand (with the exception noted in footnote 1 below). In particular, the EIS/EIR still does not include a reclamation plan, in violation of CEQA and the Surface Mining and Reclamation Act (SMARA) and the EIS/EIR does not address adequately the Attorney General's concerns about vegetation, wildlife and hazardous wastes.
4. The Supplement raises several new concerns. The Supplement fails to specify the measures that will be undertaken to mitigate the damage to the desert tortoise habitat. The Supplement improperly rejects two project alternatives without a sufficient basis and does not adequately address the environmental impact of possible future changes in the project operation. Finally, the draft compliance mitigation plan is inadequate in several respects.

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<sup>(1)</sup> The single exception is in the area of tortoise fencing for the access road. The Attorney General's previous comments took issue with the fact that the EIS/EIR sought to include fencing as a mitigation measure, without definitely committing to the fencing. The Supplement makes clear that fencing is no longer being considered as a mitigation option. Therefore the previous comments concerning fencing are no longer applicable.

Response 01

1. The Supplement was not intended to respond in detail to comments submitted on the Draft EIS/EIR. The purpose of the Supplement was stated (page 2-1) as:

"This Supplement to the Castle Mountain Project Draft EIS/EIR has been prepared to provide an update on the Proposed Action addressed in the Draft EIS/EIR. This document provides the most current information available on issues related to the Proposed Action and modifications in project design. The preparation of a supplement such as this is encouraged by NEPA and CEQA when there are technical changes to a project or additions to other information presented in the draft environmental document (EIS/EIR)."

Detailed responses to the Attorney General's comments on the Draft EIS/EIR can be found in Section 4.2.1.2 (Letter 3: State of California, Department of Justice) of this Final EIS/EIR.

2. Neither CEQA nor SMARA requires that the reclamation plan filed by the Applicant be actually included in the Draft EIS/EIR. In fact, applications for development are rarely, if ever, included in an EIR. It is common practice for the EIR to extract and summarize the reclamation data from an application into a project description. It is only necessary to include enough detail in an EIR so that the project can be evaluated for its potential environmental consequences. Since reclamation is, by design, a mitigation measure, it has few environmental consequences of its own. The Draft EIS/EIR (Section 3.2.8, Reclamation) devoted several pages to a detailed description of the reclamation plan at a level appropriate for its evaluation. The original reclamation plan (as referenced on Draft EIS/EIR page 2.1-1) and its revision are on file and available for complete review at the County of San Bernardino Environmental Public Works Agency, 385 North Arrowhead Avenue, 3rd Floor, San Bernardino, California.
3. See detailed responses to Comment No. 01, paragraph No. 4, in Response Nos. 02 through 07.

Comment 02

1. *Desert tortoise*. A June 23, 1989, report to Senator Cranston from the General Accounting Office, Resources, Community and Economic Development Division expressed particular concern for the plight of the desert tortoise. The report stated that the tortoise population in the California Desert Conservation Area was declining rapidly. Not long thereafter, the desert tortoise was designated an endangered species under Federal law and a threatened species under State law. In recognition of the threat to the tortoise, the BLM in December 1989 cancelled the running of three off-road vehicle races in the California desert.



2. Despite the clearly recognized threat to the tortoise, the Supplement simply lists a series of potential mitigations from which one or several may be chosen by the BLM. It states that the final mitigation program will be identified in the Fish and Wildlife Service (FWS) Biological Opinion. The EIS/EIR therefore delays submitting the mitigation plan until after approval of the EIS/EIR. This makes it impossible to judge the adequacy of the mitigation and is in violation of CEQA. See *Sundstrom v. County of Mendocino*, 202 Cal. App. 3d 296, 307 (1988) (EIR can't defer environmental assessment to a future date).

#### Response 02

1. The Supplement does not defer assessment of impacts or determination of appropriate mitigation. Instead, it provides the available information in the interest of full disclosure. The status of the desert tortoise has been recognized throughout the environmental review process for the Castle Mountain Project, as summarized in the following:
  - The Draft EIS/EIR clearly recognized the status of the desert tortoise even prior to its official State and Federal listings. The Draft EIS/EIR exhaustively analyzed the potential impacts, and identified specific mitigation measures (see Section 5.5 and 6.5, Wildlife) that would mitigate the potential project effects to an acceptable level.
  - As a result of public comment on the Draft EIS/EIR, the planned alignment of the access route was relocated to avoid travel through high density habitat. Had this change not occurred, the same level of mitigation could have been appropriately provided by the Draft EIS/EIR requirement for tortoise-proof fencing along the original access route alignment. The access route realignment was thoroughly described in the Supplement (Section 3.2.1, Mitigated Searchlight Access Route).
  - In view of the status of the tortoise and the Federal listing that requires consultation under the Endangered Species Act (ESA) (subsequent to the the Draft EIS/EIR), BLM requested that the Applicant provide compensation for potential impacts that, although not significant, could adversely affect the tortoise. The BLM specified several appropriate forms of compensation in the Biological Assessment submitted to FWS, and these were also listed in the Supplement (page 3-6) for public review and consideration.
  - FWS has completed its review of all available data given to BLM and published its Biological Opinion concluding that the project will not jeopardize any listed species. The FWS Biological Opinion is included in this Final EIS/EIR (Appendix G).
2. Therefore, submittal of mitigation plans has not been delayed until after approval of the EIS/EIR. Desert tortoise mitigation measures have been determined at the earliest possible date. The EIS/EIR process for the Castle Mountain Project has followed the requirements and intent of both CEQA and NEPA by: (1) identifying the potential effects and ways to mitigate

those effects, (2) requesting public input on the Draft EIS/EIR analyses, and (3) modifying the project based upon the comments received. That another agency (FWS) has been involved in the final selection of desert tortoise compensation measures does not imply that mitigation has been delayed; FWS expertise on this issue has been incorporated into the environmental review process in a logical and timely fashion, as contemplated by the Federal ESA (16 U.S.C. § 1531 *et seq.*). CEQA does not require that a particular measure be selected, only that the methods to mitigate the effect are identified and available:

"Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified *if one has been selected*" (CEQA Guidelines, Section 15126(c), emphasis added).

3. NEPA regulations require coordination of NEPA procedures with other environmental review procedures such as the ESA (40 CFR § 1502.25(a)). ESA states that its procedures should be consolidated with NEPA requirements (e.g., consultation and biological assessment procedures under Section 7 may be consolidated with interagency cooperation procedures required by NEPA) (16 U.S.C. § 1536(c)(1)). Where the ESA consultation has been consolidated with interagency cooperation procedures required by NEPA, the results should be included in the NEPA documents (50 CFR § 402.06(b)).

#### Comment 03

1. *Cumulative effects.* In *Laurel Heights Improvement Ass'n v. Regents of University of California*, 47 Cal. 3d 376, 396 (1988) the court held that an EIR must include a (*sic*) analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion will be significant in that it will likely change the scope or nature of the initial project or its environmental effects. Absent these two circumstances the future expansion need not be considered in the EIR for the proposed project. Of course, if the future action is not considered at that time, it will have to be discussed in a subsequent EIR before the future action can be approved under CEQA.
2. The Supplement purports to discuss the effects on the environment of future project modifications such as the change from heap leach mining to underground mining, modification of the ore processing procedures, selling mining by-products, expanding the plant by installing a grinding circuit and increasing the project operation beyond ten years. While the Supplement mentions briefly some of the possible environmental impacts of such changes, it does not discuss these impacts in any detail and it overlooks a number of potential



additional impacts. For example, in discussing the possibility of underground mining, the Supplement states only that there would be additional impacts on wildlife, power and water consumption, and air emissions, without attempting to quantify the extent of those impacts and without proposing any mitigations. If the permit currently being applied for contains the right to change the operation as discussed above, the environmental impacts must be discussed in detail in this EIS/EIR, along with any mitigation that will be undertaken. If the operator will be required to apply for a new permit in order to change the operation, the operator must submit a new EIS/EIR at the time it proposes to make the changes. See *Laurel Heights*, 47 Cal. 3d at 396.

### Response 03

1. While the potential exists for future mining at this site, given that the area is known to be mineralized and has been mined for nearly 100 years, future mining is not within the scope of the current application being reviewed. It is understood that a significant change in the scope or nature of the initial project will require subsequent evaluation. Consequently, future activities cited by the Commenter were analyzed as part of an expanded *Cumulative Impact Analysis*, not as part of the *Proposed Action*.
2. The Proposed Action, as described in the Draft EIS/EIR (Section 3.2, Proposed Action), represents the whole of the project as it is currently envisioned. While the Supplement analyzed additional mining at this site in response to public interest on the subject, the analysis was characterized as speculative:

"At the present time, given the facts known about the size and disposition of the mineralization in the deposits proposed for development and anticipated market conditions, discussions on potential project expansion or other substantial modifications are considered speculative" (Supplement pages 5-1 and 5-2).

The discussion of future expansion/modification was therefore specifically identified as *not* being a reasonably foreseeable consequence of the initial project. No evaluation of the environmental effects of such speculative future activities is required at all by either NEPA or CEQA.

3. Reasonably foreseeable future activities require only a general discussion. *Laurel Heights*, and other California, as well as Federal, cases do not require that the environmental impacts of reasonably foreseeable future activities associated with a project be quantified or even discussed in detail. Given the speculative and only generally defined nature of the six possible future activities identified in the Supplement, only a general discussion of the anticipated



future effects and associated mitigation measures is necessary and even possible. In general, the potential environmental effects and mitigation measures that would be employed for each of the possible future mining scenarios identified would be the same as for the Proposed Action.

4. The potential future expansions or modifications of the project, as identified in the Supplement, would require further approvals or permit amendments by the appropriate Federal, State, or local agencies, including additional environmental analysis required under NEPA and/or CEQA.

#### Comment 04

1. *Alternatives to the Proposed Action.* CEQA requires that public agencies "should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects. . . ." Pub. Res. Code Section 21002.
2. CEQA guidelines provide that an EIR must describe "a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project, and evaluate the comparative merits of the alternatives" Guideline 15126(d). The guidelines also state that the discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. Guideline 15126(d)(3). Under CEQA, therefore, the Lead Agency must consider alternatives to the project and reject them only if they are infeasible. *See Citizens of Goleta Valley v. Board of Supervisors*, 214 Ca. App. 3d 174, 186 (1988).
3. NEPA similarly requires that the EIS discuss alternatives. 42 U.S.C. section 4332(iii). NEPA is intended to provide a basis by which agencies can weigh the benefits of proceeding with a proposed project in light of its environmental risks and the risks presented by alternative courses of action. *Natural Resources Defence Council v. Morton*, 458 F.2d 827, 833 (D.C. Cir. 1972). Both the range of alternatives considered, and the discussion of the alternatives, must be sufficient to permit a reasoned choice by decision makers. *California v.*

*Block*, 690 F.2d 753, 761 (9th Cir. 1982). Alternatives must be considered even if they do not satisfy the applicant's private goals. *Van Abbema v. Fornell*, 807 F.2d 633, 638 (7th Cir. 1986).

4. Among the alternatives discussed by the Supplement to the EIS/EIR is a faster ore processing rate. The EIS/EIR concludes that in most cases the environmental impact under this alternative would be the same, except in the area of noise and air quality, which would increase, but which could be controlled by additional mitigation measures. The period of environmental impact, however, would be reduced from ten to seven years. Thus, it appears that the faster processing alternative, along with appropriate mitigation measures, would result in an overall reduction in environmental impact. The Supplement, however, rejects this alternative because it claims that it would be harder to obtain a workforce for seven years than for ten years; there would be a reduction in operational flexibility; and the faster processing would require a higher capital investment. There is no evidence in the record to support any of these assertions. Conclusory comments in support of environmental conclusions are inappropriate. The public must be provided with facts and analyses, not just bare conclusions or opinions. *Laurel Heights*, 47 Cal. 3d at 404. Furthermore, even if the alternative is more costly or impedes project objectives to some degree, it is not to be rejected unless it makes the project infeasible. Public Resource Code section 21081(c) and Guideline 15126(d)(3). Thus, even assuming that the assertions concerning project impediments are true, none amounts to a finding that the faster processing rate project would be infeasible.

#### Response 04

1. The Draft EIS/EIR (Chapter 5.0, Potential Environmental Impacts) identified and evaluated the potential effects of the Proposed Action. Mitigation measures were recommended for each identified effect, and listed in Chapter 6.0 (Mitigation Measures). "Based upon the regulatory requirements and mitigation measures that would be incorporated in the project design, the identified effects would be mitigable so that no significant impact on the environment would occur. . ." (Draft EIS/EIR page 7.1-1). Impacts that would be mitigated below a level of significance, but would nevertheless be unavoidable were discussed in the Draft EIS/EIR (Chapter 7.0, Unavoidable Adverse Impacts). Moreover, the Draft EIS/EIR did explore numerous alternatives in an effort to further reduce project effects (see Chapter 3.0, Description of the Proposed Action and its Alternatives).



2. The CEQA Guidelines (14 CCR § 15126) explain that the key issue in setting forth alternatives is whether the selection and discussion of alternatives fosters informed decision making and informed public participation (Section 15126(d)(5)). The Draft EIS/EIR studied more than 15 alternatives to the Proposed Action. Public review of the Draft EIS/EIR raised questions regarding the potential benefits of other possible alternatives. While it was recognized that the number of alternatives considered must be kept to a manageable number according to the rule of reason, the Supplement nevertheless set forth four additional alternatives in the interest of informing the public and encouraging participation. However, it should be noted that while NEPA requires a discussion of a range of alternatives, Federal courts have consistently upheld that the range considered must be feasible, viable, and practicable.
3. The Commenter inaccurately characterizes the Supplement as concluding that: (1) the Faster Processing Alternative *would result in an overall reduction in environmental impact*, and (2) the Supplement *rejects this alternative based upon the anticipated socioeconomic problems* (obtaining a short term workforce, operational flexibility, and capital investment). The Supplement did not reach those conclusions.
4. To clarify, the Supplement said that the Faster Processing Alternative would result in impacts similar to those of the Proposed Action, but would shorten the duration of the impacts (from about 10 to 7 years), while necessarily intensifying those impacts (to process the same volume of ore in a shorter time period). Traffic, noise, air quality, water use, and other effects would therefore be greater, but for a shorter time period. For this to be considered an overall reduction in environmental impact is recognized as a matter of personal perspective. Thus, the Supplement did not attempt to make a subjective recommendation on this issue, only to display the information.
5. While the Supplement offered a discussion of some of the potential negative socioeconomic impacts that could be associated with the Faster Processing Alternative, it clearly separated these considerations from the discussion of environmental merits and weaknesses, and stated that "these practical and economic considerations would discourage selection of the Faster Processing Alternative from a *socioeconomic standpoint* " (page 4-22) (emphasis added). CEQA and NEPA do not treat socioeconomic effects as significant effects on the environment. While social and economic factors must be considered by public agencies in deciding whether changes in a project are feasible to reduce or avoid significant environmental effects, the



EIS/EIR satisfies its purpose by analyzing the environmental consequences. The Applicant may submit specific evidence for the record at the time the BLM and County consider project approval pertaining to economic feasibility.

#### Comment 05

1. The Supplement also examines a reduced project alternative which would decrease the total amount of ore processed. A reduced project would significantly decrease environmental impact overall. The Supplement to the EIS/EIR rejects this alternative solely on the basis that it would leave unprocessed 50 percent of the ore. The Supplement claims that this would defeat the purposes of Federal mining law and would constitute an unconstitutional taking of the property rights of the operator under the Fifth Amendment. The operator seems to suggest that Federal law gives it an absolute right to develop fully any mineral rights it discovers, no matter what the environmental impact. This proposition is contradicted by the fact that Federal regulations require a mining operator to avoid undue degradation of the environment. <sup>(1)</sup> Furthermore, the operator has not met the requirements for showing that a taking would be effected by the reduced project alternative. A land use regulation can effect a taking if it does not substantially advance legitimate State interests or denies the owner an economically viable use of his land. The owner must show that the regulation makes it impossible for him to engage profitably in business or constitutes an undue interference with his investment backed expectations. See *Keystone Bituminous Coal Ass'n. v. De Benedictis*, 107 S. Ct. 1232, 1242 (1987). The operator has made none of the above showings and has therefore not demonstrated why the reduced project alternative would constitute a taking.

#### Response 05

1. An arbitrary 50 percent reduction in virtually any proposed project would reduce its overall potential environmental impact. The primary purpose of the Reduced Project Alternative (and the Enlarged Project Alternative) as studied in the Supplement, was to provide a comparative analysis, so that the relative impacts of the Proposed Action could be weighed against projects of smaller (or larger) scale. Such comparative analysis informs the public and the agencies as to whether or not a significant change in project size would translate into a significant change in potential environmental impact. The Supplement concluded that, like the Proposed Action, either a larger or smaller project could be effectively mitigated below a level of significance

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(1) Title 43 U.S.C. Section 1781(6)(f) provides that "all mining claims located on public lands within the California Desert Conservation Area shall be subject to such reasonable regulations as the Secretary may prescribe to effectuate the purpose of this section. . . . Such regulations shall provide for such measures as may be reasonable to protect the scenic, scientific and environmental values of the public lands of the California Desert Conservation Area against undue impairment. . . ."

and the same unavoidable effects would occur. (For a summary of potential unavoidable effects, see Supplement Table 4.1, Proposed Action and Alternatives, Comparative Unavoidable Adverse Impacts.)

2. The discussion of alternatives was not intended to suggest that Federal law gives the operator ". . . an absolute right to develop fully any mineral rights it discovers, no matter what the environmental impact," as implied by the Commenter. Rather, the Draft EIS/EIR and Supplement were prepared to ensure that each potential effect of the Proposed Action would be properly identified so that it could be mitigated below a level of significance. In this manner, unnecessary or undue degradation of the environment would be avoided.
3. In regard to the Supplement's reference to "taking" considerations, relative to the Reduced Project Alternative; neither NEPA nor CEQA requires that an EIR or EIS address purely legal issues (as opposed to substantive environmental issues). However, because the Proposed Action is a mining operation, and since there are laws particular to mining that pertain to this project's approval, the Draft EIS/EIR and Supplement have made an effort to reference those considerations, where appropriate. The Applicant must bear the burden of providing evidence for the record demonstrating that the Reduced Project Alternative is not economically feasible. While the agencies must consider economic factors in deciding whether proposed modifications are feasible, the EIS/EIR has satisfied its obligation in reviewing the environmental consequences of this and other alternatives.

#### Comment 06

1. *Draft Mitigation Compliance Program.* According to the Draft Mitigation Compliance Monitoring Program, the owner/operator is responsible for all phases of monitoring and reporting, including issuing "out of compliance notices" and determining a schedule for remediation. Because the principle responsibility for the compliance program is with the owner/operator, all reports should be made under penalty of perjury. As the plan now stands, "out of compliance notices" along with quarterly and annual reports are supplied to the Bureau of Land Management (BLM) and County. The plan should be modified to require the operator to supply all quarterly and annual reports to any other government agency or member of the public who so requests. In addition, "out of compliance notices" should be supplied not only to the BLM and County, but also to any other government agency or member of the public who so requests.



2. The system proposed anticipates that in the event of a dispute over mitigation measures, an informal enforcement process must be undertaken prior to the initiation of formal enforcement proceedings. This may be unduly time consuming in certain emergency situations. There must be some mechanism by which the BLM and County can avoid the informal dispute resolution process if necessary.
3. The Draft Mitigation Compliance Report, as it now stands, is only a bare outline of procedures. It should include a specific statement of what will be monitored and the timetable for the monitoring. Without such specifics, it is impossible to judge the adequacy of the plan.

#### Response 06

1. Neither NEPA nor CEQA requires that a draft mitigation compliance program be included in an EIS/EIR. The program need only be developed and approved at the time of project approval for inclusion in: (1) BLM's record of decision, and (2) the County's findings for its conditional use permit. The program would be based on the exhaustive analysis of mitigation measures included in the Draft EIS/EIR and Final EIS/EIR (see Draft EIS/EIR, Table 1.1.1, Summary of Potential Effects and Mitigation Measures). However, in order to obtain additional public input on the program's procedural methodology and organizational structure, a Draft Mitigation Compliance Program was prepared and circulated in the Supplement to provide for public review and comment at the earliest possible time. The specific substantive contents of the monitoring program, including the timetable for monitoring, will be specified when the BLM and County formally identify the conditions imposed on the project, based on the mitigation measures identified in the Final EIS/EIR.
2. With respect to the Commenter's request that compliance reports be made under "penalty of perjury," the Supplement (page E-75) explains "Federal law makes it a crime, punishable by a fine of not more than \$10,000 or imprisonment for not more than five years to knowingly or willingly falsify, conceal, or cover up any material fact or make false statements . . ."
3. The operator will be obligated to provide quarterly and annual reports, and "out of compliance" notices to the agency having jurisdiction over the activities being completed. Those reports will be on file with the agencies and can be accessed or requested by the public.



4. The Commenter's concern for the need of a mechanism to avoid informal dispute resolution in an emergency situation is acknowledged. The final MCP will therefore state that "for an emergency (Category 3) out of compliance condition, remedial action shall not be delayed by dispute resolution proceedings."

#### Comment 07

1. *Conclusion.* Both CEQA and NEPA are intended to insure that agencies will be fully aware of the impact of their decisions when they make them, see Calif. Pub. Res. Code Sections 21000, 21001; *Friends of Mammoth v. Board of Supervisors*, 8 Cal. 3d 247, 254-56 (1972); *Trout Unlimited v. Morton*, 509 F. 2d 1276, 1283 (9th Cir. 1974), and to facilitate widespread discussion and consideration of the risks associated with a project. *LaFlamme v. F.E.R.C.*, 842 F. 2d 1063, 1069 (9th Cir. 1988). CEQA also requires agencies to seek feasible means to reduce or avoid environmental damage that otherwise could result from their actions. Pub. Res. Code section 21002 and Guidelines sections 15002(a)(3), 15021(a)(2), 15126(c)(d), 15364, 15370.
2. The EIS/EIR and the Supplement fail to comply with the requirements of NEPA and CEQA. The documents do not disclose the precise mitigation plan proposed for the desert tortoise. The EIS/EIR and Supplement improperly reject two alternative project plans that would reduce environmental impacts and do not adequately analyze the possible effects of future changes in the project. In addition to the above, the Draft Compliance Mitigation Plan is inadequate in several respects.
3. The goals of CEQA and NEPA will not be served and the protection of a delicate and irreplaceable desert environment will not be fostered, without a more complete analysis and presentation of the environmental impacts of the project and without more serious consideration given to viable project alternatives that will reduce harmful environmental impacts.

#### Response 07

1. Comments noted. See above Response Nos. 01 through 06.

LETTER 3: STATE OF CALIFORNIA, REGIONAL WATER QUALITY CONTROL BOARD  
(REGION 7)

Comment 01

1. The Regional Board staff has no objections to either of the two proposed methods for storing process fluid for the subject project as described in the Supplement. However, in Alternative No. 2, which would use steel tanks for storing the process fluid, special attention needs to be given in the design of the liner(s) which would be placed under the steel tanks to allow for adequate protection from liner failure due to the added weight of these large tanks. In addition, storage tanks may be subject to the Underground and/or Above-Ground Storage Tank regulations.

Response 01

1. Comments noted.

## LETTER 4: STATE OF NEVADA, GOVERNOR

Comment 01

1. Viceroy Gold Corporation has requested that I contact you regarding their proposed mining project located in San Bernardino County, California. There has been no formal review by the State of Nevada regarding the environmental impact statement prepared for the Castle Mountain Project since it is located in California. I would, however, like to share with you Nevada's experience with similar projects.
2. The State of Nevada leads the nation in gold production with approximately 125 active mine sites. Our experience has shown that when these sites are properly constructed and operated, they present a low potential for adverse impact to the environment.
3. If your review of the Castle Mountain Project shows it can be operated safely with minimal environmental impact, I recommend you approve the project as soon as possible.
4. Staff of the Nevada Division of Environmental Protection may be contacted at (702) 687-4670, should any technical assistance be required.

Response 01

1. Comments noted.





LETTER 5: STATE OF NEVADA, NEVADA LEGISLATURE

Comment 01

1. I am writing to express my support of Viceroy Gold Corporation's Castle Mountain Project.
2. Viceroy has shown a strong commitment to the community and the environment. They have made conscientious efforts to avoid and mitigate undesirable environmental impacts. The Castle Mountain Project's comprehensive Environmental Impact Statement (EIS)/Environmental Impact Review (EIR) and Supplement demonstrates Viceroy's commitment.
3. Also, the Project will have a very positive economic impact in the east Mojave, with a work force averaging 125 employees. The Project is expected to generate local, State, and Federal tax revenues of approximately 60 million dollars over it's 10 year life.
4. Because of Viceroy's demonstrated commitment to preserve wildlife habitats, visual and cultural resources and it's significant contribution to the local economy, I urge you to approve the Project as soon as possible.

Response 01

1. Comments noted.



#### 4.2.2.3 LOCAL AGENCIES

Letter 1: Clark County, Board of County Commissioners

Letter 2: Clark County, Department of Aviation

Letter 3: San Bernardino County Museum



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## LETTER 1: CLARK COUNTY, BOARD OF COUNTY COMMISSIONERS

Comment 01

1. It is my understanding that the BLM is now reviewing the EIS/EIR Supplement for Viceroy Gold's proposed Castle Mountain project.
2. I wish to inform you that Viceroy Gold has worked diligently with Clark County in addressing the listing of the desert tortoise as an endangered species. Viceroy has offered an option to The Nature Conservancy to establish a desert tortoise preserve in an area of Clark County which is considered prime tortoise habitat.
3. This action represents a significant commitment and would not be possible without approval of the project.

Response 01

1. Comments noted.

LETTER 2: CLARK COUNTY, DEPARTMENT OF AVIATION

Comment 01

1. I am writing to express my support of Viceroy Gold Corporation's Castle Mountain Project.
2. Viceroy has shown a strong commitment to the community and the environment. They have made conscientious efforts to avoid and mitigate undesirable environmental impacts. The Castle Mountain Project's comprehensive Environmental Impact Statement (EIS)/Environmental Impact Review (EIR) and Supplement demonstrates Viceroy's commitment.
3. Also, the Project will have a very positive economic impact in the east Mojave, with a work force averaging 125 employees. The Project is expected to generate local, State and Federal tax revenues of approximately 60 million dollars over its 10 year life.
4. Because of Viceroy's demonstrated commitment to preserve wildlife habitats, visual and cultural resources, and its significant contribution to the local economy, I urge you to approve the project as soon as possible.

Response 01

1. Comments noted.

**LETTER 3: SAN BERNARDINO COUNTY MUSEUM****Comment 01**

1. Thank you for the opportunity to review the above-referenced document.
2. Paleontologic sensitivity maps for the CDCA and from the County of San Bernardino indicate that there is potential for Tertiary sediments on the Castle Mountain mine project to contain significant nonrenewable paleontologic resources. As yet, the DEIR and Supplement have not adequately addressed impacts to paleontologic resources.
3. The initial discussion as presented was inadequate because a vertebrate paleontologist had not conducted a literature and records search and a field assessment, nor was a program to mitigate impacts to nonrenewable paleontologic resources presented.
4. The museum would be pleased to review the program for mitigation of impacts to paleontologic resources when it has been developed.

**Response 01**

1. See Section 4.2.1.3 (Letter 3: County of San Bernardino, San Bernardino County Museum) of this Final EIS/EIR for a discussion on the absence of onsite paleontologic resources.





### 4.3 RESPONSE TO ORGANIZATIONS

1. This section provides a detailed response to each organization that submitted specific comments or that requested individual response. Where comments or suggestions resulted in modifications to the project or alternative mitigation, those changes were reflected in Chapter 3.0. Comments from letters have been typed verbatim, unless otherwise indicated.





#### 4.3.1 DRAFT EIS/EIR RESPONSES





#### 4.3.1.1 BUSINESS/COMMERCIAL REPRESENTATIVES

Letter 1: Bond Gold Colosseum, Inc.

Letter 2: Sunshine Mining Company

Letter 3: YKL Ranch







## LETTER 1: BOND GOLD COLOSSEUM, INC.

Comment 01

1. Our access road crosses some low density tortoise habitat. The type of mitigation which our EIS/EIR requires us to do is similar to that which is recommended for the Castle Mountain Project
2. In the two years we have been in operation, we have had no tortoise casualties on our access road. Tortoise are seen most frequently in the spring and rarely the rest of the year. Any time a tortoise is found on the road, it is moved using the BLM's recommended procedure. We are comfortable with and confident in our required mitigation.
3. In the Draft EIS/EIR for the Castle Mountain Project it is stated in [Section] 11.2 "Tortoise fencing and culverts shall be constructed along portions of the Searchlight Access Route and Ivanpah Access Route segments passing through crucial desert tortoise habitat." Based on our experience, I feel fencing their access routes is unnecessary. Fencing and culverts will be expensive to install and maintain because the access routes are in low land subject to flooding. Why not wait to see if fencing is necessary first? Our mitigation measures work for our project, why not give them a try at Castle Mountain?

Response 01

1. Comment noted. More intensive desert tortoise protection measures have been proposed in the Castle Mountain Project Draft EIS/EIR than were required for Bond Gold Colosseum based upon the higher density habitat that would have been crossed by the Ivanpah Access Route to this project. It is recognized that less intensive measures have proven effective in protecting the desert tortoise at other locations. It should be noted that since plans for the preferred access route for the Castle Mountain Project were changed in the Supplement (Section 3.2.1, Mitigated Searchlight Access Route) to avoid travel through Category 1 desert tortoise habitat, tortoise proof fencing is no longer recommended.

## LETTER 2: SUNSHINE MINING COMPANY

### Comment 01

1. Geology - The most important issue here has to do with the potential for chemical spills as a result of earthquake damage such as ground movement or slope failure. The mitigation measures described adequately address this concern. The use of HDPE liner material should provide for some flexibility in the event of an earthquake, as opposed to an asphalt liner.

### Response 01

1. Comment noted.

### Comment 02

1. Water Resources - Hydrogeologic studies appear to have adequately evaluated the effect of well drawdown on the local water table. The deepening of wells, both existing and proposed, are acceptable mitigation measures to insure that present users are protected and that flow from Piute Spring is maintained.
2. Established guidelines by the RWQCB are adequate to prevent contamination on the ground water by leakage of cyanide solutions. Even if a leak were to occur, the depth to the water table and the propensity for cyanide to degrade and form stable, non-toxic compounds in nature would rule out the possibility of contamination.
3. The disruption of natural drainage patterns is not a significant issue, since these so seldom contain any surface waters.

### Response 02

1. Comment noted.

### Comment 03

1. Vegetation - The temporary loss of vegetation in the project area will not affect any endangered plant species and, because the total impact accounts for only 0.4 percent of the acreage of Lanfair Valley, should therefore not be considered significant.

### Response 03

1. Comment noted.



## Sunshine Mining Company

Comment 04

1. Wildlife - Mitigation measures which have been proposed by the Applicant should be adequate to minimize the long-term effect on wildlife, including those listed as special interest species. An employee education program should be helpful in reducing the human impact on the desert tortoise, particularly if it is combined with a strict disciplinary action policy. Plans for bussing employees should also prove significant in minimizing the effect on the tortoise.
2. Planned measures for preventing wildlife mortality due to contact with cyanide solutions have proven effective at other similar operations, and should work equally well here.

Response 04

1. Comment noted.

Comment 05

1. Air Quality - Existing Federal and State air quality regulations should be more than adequate in protecting the environment in the project area. Fugitive dust is, by far, the most important issue, and dust generated by natural forces makes the proposed project extremely insignificant by comparison.

Response 05

1. Comment noted

Comment 06

1. Health and Safety - Existing MSHA, Cal-OSHA, ICC, and Mine Land Reclamation requirements should be adequate to address health and safety concerns of employees and the general public.

Response 06

1. Comment noted.

Comment 07

1. Visual Resources - Because the project has been designed in accordance with "best practices" as defined in the East Mojave National Scenic Area Plan and because of the ultimate reclamation work planned, the overall long-term visual impact of the project will not be significant.

Response 07

1. Comment noted.

Comment 08

1. Cultural Resources - This issue has been effectively addressed in planned mitigation measures under the proposed plan.

Response 08

1. Comment noted.

Comment 09

1. Land Use - The proposed project constitutes an appropriate and beneficial use of public land that should not interfere with other uses in the area.

Response 09

1. Comment noted.

Comment 10

1. Socioeconomics - The Applicant has adequately addressed the potential impact of 150 new jobs in the area. Because mines' rate of pay is generally higher than other forms of employment, the project should have a beneficial effect on the local communities of Mountain Pass and Searchlight.

Response 10

1. Comment noted.

Comment 11

1. Infrastructure - This issue has been adequately addressed in planned mitigation measures under the proposed plan.

Response 11

1. Comment noted.

Comment 12

1. Sunshine Mining Company believes that the Applicant has submitted a thorough and professional EIS/EIR which should be sufficient in its scope to enable the BLM to make an

informed decision with respect to the project. Sunshine also believes that the overall benefits of this project will far outweigh any possible adverse impacts. Also, the project is large enough to provide a relatively long-term boost to the local economy, even at lower metal prices. The project area does not possess any unique environmental concerns that have not been adequately addressed in the Applicant's proposed mitigation measures. Sunshine therefore supports the proposed action.

#### Response 12

1. Comment noted.
2. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR.



### LETTER 3: YKL RANCH

#### Comment 01

1. I call your attention to the Castle Mountain Project as described in the Draft EIS and EIR of February 1989 and to the Searchlight Access Road projected therein. We have strongly protested this road several times since it was originally projected but, obviously, Viceroy Gold Corporation has not seen fit to consider our objections in spite of several face to face conversations on the subject.
2. This road is merely a convenience for Viceroy and not a necessity without which they cannot operate, since they already have an adequate improved road, if a slightly inconvenient one, via the Ivanpah Access Route. On the other hand, the construction, maintenance and use of an improved road as projected for the Searchlight Access will create havoc to the livestock operation on the Crescent Peak Allotment. This projected road will interfere directly with livestock access to several important waters and the fast traffic, which would result from such a road, would surely result in cattle collision and death and destruction to both livestock and vehicles and people.
3. While Viceroy states that they would be willing to reimburse us for animals which are killed by vehicle collision, they cannot mitigate the misery inflicted upon crippled ones, nor can they adequately reimburse us for the full value of those which are killed or crippled. I will not go into the damage to wildlife which might result from this road, since I believe this has been adequately covered elsewhere.
4. It appears unreasonable to allow a convenience to interfere with an existing operation of the age and stability of the grazing operation on the Crescent Peak allotment and we suggest that the Searchlight Access Route be denied.

#### Response 01

1. The Draft EIS/EIR recognized the potential danger to livestock as a consequence of increased traffic along the access routes. Mitigation measures proposed in the Draft EIS/EIR (pages 6.10-1 and 6.10-2) to alleviate these effects include:
  - The Applicant shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by BLM.
  - Cattle guards shall be installed and maintained by the Applicant at points where cattle control fences cross the access roads.

## YKL Ranch

- If project activities inhibit use of watering facilities by cattle, the Applicant shall provide alternate water sources, in accordance with requirements of BLM.
- Grazing lessees shall be compensated by the Applicant for livestock killed or injured by vehicles driven by project employees.

It is believed that these measures will adequately mitigate potential conflicts with grazing uses in the Crescent Peak Allotment and Lanfair Valley Allotment.

*Note to Readers: Subsequent to the date this comment was written, the Applicant purchased the YKL Ranch from the Commenter, including the lands subject to the Crescent Peak Allotment. Since the proposed access route from Searchlight also crosses a portion of the Lanfair Valley Allotment, the Applicant would implement mitigation measures recommended in the Draft EIS/EIR (pages 6.10-1 and 6.10-2) to alleviate potential conflicts between cattle and vehicles using the access route.*





#### 4.3.1.2 CONSERVATION/ENVIRONMENTAL ORGANIZATIONS

Letter 1: Citizens for Mojave National Park, Inc.

Letter 2: Desert Bighorn Council

Letter 3: The Desert Protective Council, Inc.

Letter 4: Desert Survivors

Letter 5: The Desert Tortoise Council

Letter 6: National Parks and Conservation Association

Letter 7: Sierra Club, California/Nevada Mining Committee

Letter 8: Sierra Club, Legal Defense Fund

Letter 9: Sierra Club, Mojave Group

Letter 10: Society for the Conservation of Bighorn Sheep

Letter 11: The Wilderness Society and Natural Resources Defense Council





## LETTER 1: CITIZENS FOR MOJAVE NATIONAL PARK, INC.

Comment 01

1. We support the NO PROJECT alternative. For BLM and the DEIS to claim that the proposed project has "no adverse environmental impact" is absurd and ridiculous.

Response 01

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of project approval.

Comment 02

1. In the future, we will probably oppose any project in East Mojave National Scenic Area (EMSNA) which has an EIS prepared by a private company. The BLM must be the preparers of the EIS. On this proposal it is obvious that the tail wagged the dog. The BLM must gain mining expertise if it is to continue to be a steward of our public lands.
2. The Draft EIS is not adequate. The jejune analysis of potential effects, mitigation measures, and non-significance after mitigation formula used in this DEIS is self-serving. The EIS process has been perverted by Environmental Solutions.

Response 02

1. Because of staff constraints, mandatory time limits, and/or lack of expertise on certain issues, most public agencies in California do not directly engage in the preparation of EISs and EIRs. Use of contractors for preparation of EISs is referred to in Federal regulations as "third party contracting." These regulations, and the process that was followed for the Castle Mountain Project EIS/EIR, are explained in the following:

The CFR provides guidance on the subject of EIS preparation by "third party contracting:"

"...any environmental impact statement prepared pursuant to the requirements of NEPA shall be prepared directly by (the lead agency) or by a contractor selected by the lead agency...It is the intent of these regulations that the contractor be chosen solely by the lead agency...to avoid any conflict of interest" (40 CFR 1506.5(c)).



The President's Council on Environmental Quality (CEQ) explains that:

"If a Federal agency uses 'third party contracting,' the Applicant may undertake the necessary paperwork for the solicitation of a field of candidates, so long as the agency complies with Section 1506.5(c)" (46 FR 18026).

CEQA does not provide corresponding guidance on such contracting for preparation of environmental documents. Instead, it delegates the responsibility for methods of selection and payment of contractors to the local Lead Agency responsible for CEQA compliance.

2. Environmental impact evaluation is, by design, a public process which emphasizes full disclosure, irrespective of the document preparer. The contractor's role is to assist the agency in document preparation, not to recommend project approval or denial. The agencies understand this role and their responsibilities in this process. The CFR specifically requires that:

"If the document is prepared by contract, the responsible Federal official shall furnish guidance and participate in the preparation and shall independently evaluate the statement prior to its approval and take responsibility for its scope and contents" (40 CFR 1506.5(c)).

Likewise, a draft EIR may be prepared under contract to the Lead Agency. However, before using a draft prepared by another person, the Lead Agency must still subject the draft to the agency's own review and analysis (14 CCR §15084).

3. The Lead Agency must also certify that the final EIR has been completed in compliance with CEQA and that the decision-making body having final approval authority reviewed and considered the final EIR before approving the project (14 CCR §15090).
4. Lead Agencies are legally responsible for the adequacy of their environmental documents. Therefore, it is in their best interest to maintain the integrity of the environmental review process through the preparation of objectively conceived and written documents. Contractors must also prepare a disclosure statement stating that they have no interest in the outcome of the project (40 CFR Section 1506.5(c)). Such a statement was referenced on the cover page to the Draft EIS/EIR and Supplement.
5. For the Castle Mountain Project, the BLM and County have been integrally involved in the preparation of the Draft EIS/EIR; from the identification of issues to evaluation of potential impacts and development of appropriate mitigation measures. Changes in the document

mandated by both the BLM and County were incorporated in the Draft EIS/EIR and Supplement prior to their publication. The document was prepared in consultation with other agencies, public interest groups (including the Citizens for Mojave National Park, Inc.), and individuals with special expertise. The BLM and County are, therefore, the preparers of the Draft EIS/EIR.

#### Comment 03

1. There is no assurance of an adequate bond. This project must have a "worst case disaster" bond. The worst case scenario is a toxic waste spill, killing wildlife, plant life, heavy metals leaching into the aquifer, bankruptcy and no reclamation, and the drying up of Piute Creek. A bond of \$5,000,000 would hardly begin to cover these costs. After the oil spill at Valdez, Alaska -- The BLM should not trust the environmental guarantees of any exploitive company. Until a worst case scenario bond is assured to the public, we must insist on the No Project Alternative. The public has no assurance that the company might go bankrupt and fail to do adequate reclamation and cleanup. Taxpayers can no longer afford to continue picking up after irresponsible companies. We are not aware of any major mining reclamation that BLM has ever supervised.

#### Response 03

1. See Draft EIS/EIR (Section 3.2.8.3, Bonding) and Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for discussions on bonding.
2. The Draft EIS/EIR was prepared as an assessment of the reasonably foreseeable consequences of the Proposed Action. A worst case scenario is not required by CEQA or NEPA. Bonding should likewise be based upon the credible scientific evidence and reasonably foreseeable consequences.

#### Comment 04

1. We insist that the water for the project be taken from outside EMNSA. At risk is Piute Creek, the only year round flowing creek in the East Mojave. Piute Creek (with its ACEC and WSA) is much too valuable to place at risk. We insist on the No Project Alternative until we are assured that the water for the proposed mine comes from outside the National Scenic Area. We are painfully aware that BLM has no experience or expertise in maintaining rare desert riparian habitats. We will not allow an Afton Canyon disaster to happen to Piute Creek. The hydrology report in the DEIS does not assure us, nor do BLM's verbal assurances of monitoring assure us.



2. Overdrafting, which is certain to occur should this project be approved, will almost certainly cause the cone-of-depression around the proposed West Well Field to be diverted away from the natural flow to Piute Spring. The DEIS and BLM say that losing this water from Lanfair Valley will cause no adverse environmental impact. Other hydrologists state otherwise.
3. Piute Creek is a beautiful five mile riparian oasis and we love to visit and revisit it. Under no circumstances will we allow any proposal to threaten Piute Creek. The water of Piute Creek is worth more than any amount of gold.

#### Response 04

1. Importation of water from other sources could cause additional adverse environmental effects, which would need to be evaluated. Since the proposed project would have no adverse effect on Piute Spring or other water sources in Lanfair Valley, there is no apparent reason to require importation of water from another location. The water resource analyses for the Draft EIS/EIR were independently prepared by hydrology experts. For a discussion of other opinions on water resource impacts, see Section 4.1.5 (Water Resources) of this Final EIS/EIR. It should be noted that disagreement among experts does not render an EIR inadequate (14 CCR § 15151).

#### Comment 05

1. We will not allow for a toxic waste dump in a National Scenic Area. If the proponents want to have a cyanide leaching pond for the project, they will have to locate it outside EMNSA. We will not permit a potential Superfund area in EMNSA. We insist on the No Project Alternative until the cyanide heap leaching process is located outside the EMNSA.
2. The presence of water in the cyanide leach ponds serves as a fatal attraction to wildlife. This water is toxic and animals and birds attracted to it will be killed. There must be a closed cyanide system -- where there is no open water for wildlife. We have not forgotten about the recent cyanide pond spill at the Morningstar Mine, and the mining company and BLM's fumbled attempts at coverup of wildlife mortality.

#### Response 05

1. Use of cyanide solution for heap leach gold mining should not be confused with toxic waste disposal. As discussed in the Draft EIS/EIR, cyanide solutions would be recirculated for use



in the heap leach process. Decommissioning of project facilities would involve neutralizing the cyanide according to procedures that are required by the RWQCB. No toxic wastes would be deposited onsite.

2. Measures to isolate cyanide solutions from wildlife have been addressed in the Draft EIS/EIR (Section 5.5, Wildlife) and the Supplement (Section 3.2.2, Solution Storage) and are discussed in Section 4.1.6 (Wildlife) of this Final EIS/EIR.
3. As stated in the Draft EIS/EIR (page 5.5-7):

"The cyanide solution collection and transport system would operate as a closed circuit, with solution transported from the heap piles to storage ponds and to the processing plant in a system of closed pipes instead of the open ditches. Ditches would be used only to carry heavy storm runoff. This would avoid potential exposure of animals to solution."

Based on this, and other recommended measures such as fencing and netting, no significant impact to wildlife is expected.

4. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of project compatibility with the EMNSA.
5. Locating the processing activities outside of the EMNSA would result in similar environmental effects elsewhere, and could create additional impacts due to the additional transportation requirements.

#### Comment 06

1. We will not permit continued tortoise mortality in EMNSA. EMNSA contains perhaps the largest populations of this species of desert tortoise in the world. 150 new vehicles per day driving through Ivanpah or Piute Valley crucial desert tortoise habitat is unacceptable. Unless the project can be scaled down to only about 25 vehicles per day (which might be feasible were the cyanide pits and other activities located outside EMNSA), we must insist on the No Project Alternative in order to stem tortoise mortality.
2. Fencing and construction of culverts in crucial desert tortoise habitat has not yet proved to be a satisfactory means to maintaining current tortoise populations.

Response 06

1. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussion on current considerations for the desert tortoise.
2. Project traffic is summarized in Draft EIS/EIR (Table 3.2.3, Estimated Weekday Traffic). Total traffic is estimated at 54 vehicles per day (108 ADT). The Draft EIS/EIR proposed fencing along segments of road through crucial desert tortoise habitat (along Ivanpah Road in Ivanpah Valley) to mitigate project impacts. While it is recognized that fencing alone cannot solve all of the problems related to the decline of desert tortoises, it is effective in eliminating the impacts of traffic, which, for this project is the primary potential impact.
3. Since the planned relocation of the preferred access route (as described in the Supplement, Section 3.2.1, Mitigated Searchlight Access Route) would remove project traffic from Category 1 tortoise habitat, the Commenter's concern for the tortoise should be satisfied.

Comment 07

1. Under this Draft EIS, Nevada gets the jobs, Canada gets the profits, Japan gets the gold, and America gets the mining scars and toxic waste dump. We Californians get nothing. Enclosed as part of our comments is the San Bernardino county newspaper's editorial cartoon of April 24 and the editorial of April 22. These two newspaper articles are an integral part of our comment.
2. The DEIS has no analysis, no understanding and no vision of what a National Scenic Area is. The DEIS assumes that this project is going to occur on just any BLM land and that the usual BLM giveaway mentality prevails. We insist on the No Project Alternative in a National Scenic Area until we can be assured that the water, cyanide pits, and tortoise impact will all be outside of EMNSA.

Response 07

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of project approval.
2. See the Draft EIS/EIR (Chapter 2.0, Introduction) and Section 1.2 (Final EIS/EIR Requirements) of this Final EIS/EIR for a discussion of the purposes of an EIS/EIR. The BLM multiple-use management goals for the EMNSA which allow mining and the Castle

Mountain Project's compatibility with those goals were addressed in the Draft EIS/EIR (Section 4.10 and 5.10, Land Use) and are also discussed in Section 4.1.7 (Land Use) of this Final EIS/EIR.

#### Comment 08

1. Viceroy plans to remove 90 million tons of soil in its search for microscopic gold. Major components of the proposed project would include the mine pits, overburden pile, crushing and ore transport facilities, heap leach pads, solution storage ponds, gold processing plant, and soil storage areas. Nothing in the above description has anything to do with a National Scenic Area. They are all ugly.
2. The Draft EIS is a perfect example of why BLM's Desert Plan has failed. BLM's designations of Class L (Limited Use), ACEC (area of critical environmental concern), Outstanding Natural Area, crucial desert tortoise habitat, recommended wilderness, National Scenic Area -- all these designations are meaningless when miners want to remove 90 million tons of soil and dry up valuable water resources. The proposed Castle Mountain mine shows the necessity and urgency of the 1.5 million acre Mojave National Park. The National Park Service would ensure that water supply came from outside of the park, the cyanide ponds be completely closed and located outside the park, and that crucial desert tortoise habitat be unaffected.
3. We are greatly disappointed that BLM would trash EMNSA for a mess of pottage. The No Project Alternative is the only alternative that BLM can select unless it plans to lose the total 1.5 million acres of the National Scenic Area to the National Park Service.

#### Response 08

1. See Sections 4.1.7.1 (East Mojave National Scenic Area Compatibility) and 4.1.7.2 (Proposed Mojave National Park) of this Final EIS/EIR for a discussion on these subjects.
2. The Commenter should be aware that mining has occurred, and continues to occur, in parks and monuments managed by the National Park Service, including Death Valley National Monument.



## LETTER 2: DESERT BIGHORN COUNCIL

Comment 01

1. Hart Mountain is good bighorn habitat and a critical part of a chain of mountains -- Castle, Hart and Piute -- that make up the range of 25 or more bighorn. The proposed open pit mine will destroy a significant portion of the habitat and has the potential of reducing the population, perhaps below a level that would sustain itself. Therefore, the habitat lost must be mitigated for. Offsite water development to improve carrying capacity is the measure most often considered. The site of water development is most critical in order to be effective. Other mitigation measures might include paying for reintroductions or purchasing habitat in private ownership.

Response 01

1. Based upon the review of data on the Castle Mountains/Piute Range population of bighorn sheep for the Draft EIS/EIR (Section 5.5, Wildlife), it was determined that the proposed project would affect about three percent of the desert habitat used by this population of about 15 animals. Based on the small size of the population, no significant impact is expected from this disturbance. This issue is also discussed in Section 4.1.6.3 (Bighorn Sheep) of this Final EIS/EIR.
2. At the termination of project operations, one of the water wells will be available to the BLM. Appropriate use of water from these sources, including guzzlers for the enhancement of bighorn sheep, will be considered by the BLM.

### LETTER 3: THE DESERT PROTECTIVE COUNCIL, INC.

#### Comment 01

1. The lack of a Lead Agency makes the public responsible for having to track two separate administrative and legal routes. This is an unconscionable burden for the public, but an adroit move for Viceroy/BLM/County.
2. Further, this dual accountability can result in a "no accountability" with each agency referring to the other.
3. The financial burdens to taxpayers for the dual system is not revealed.

#### Response 01

1. As indicated in the Draft EIS/EIR, project activities would be regulated by numerous agencies at the local, State, and Federal level. The BLM and County are acting as cooperating Lead Agencies for preparation of the Final EIS/EIR, in accordance with CEQA Guidelines, (14 CCR § 15226 and § 15170), and CEQ regulations (40 CFR § 1506.2). This document will be used by each of these agencies in their consideration of those project activities which are within their regulatory authority. Other agencies will subsequently use the document in their consideration of various permits that are also required. Such cooperation in the environmental process has been designed to consolidate paperwork and avoid duplication of efforts which would occur through the preparation of separate analyses. This should lessen the cited public "burden" in tracking the two administrative processes.
2. Each agency is legally accountable for the discretionary activities within its own regulatory authority. Deferring to another agency for such responsibility is prohibited by law.
3. Through the cooperative efforts of the BLM and County throughout the EIS/EIR process for the Castle Mountain Project, potential redundancy in environmental processing has been avoided. Agency staff time and associated costs have therefore been minimized.

#### Comment 02

1. As to the DEIS/EIR itself, there are several interesting observations: Mitigation. The "shall be" syndrome: Everything is in the future. The public has no specifics now upon which to comment. For example, in the Summary document, on just the first two pages, there are



23 "shall bes." . . . one even circumscribes the parameters of a research program (Vegetation 1.1). Question: How can the public which has no data now, and which is excluded from the site, deal with so many "shall bes?"

#### Response 02

1. The Draft EIS/EIR presents the results of analyses completed to determine potential environmental impacts. The data necessary to make an informed decision on the discretionary entitlements being requested have been included. As the Draft EIS/EIR is prepared for an activity which has not yet taken place, the standard terminology "shall be," which is to be interpreted as legally binding, was included in describing mitigation measures that would be incorporated in the project should the BLM and County grant the actions requested by the Applicant. The tense of Draft EIS/EIR text should therefore not be misconstrued as uncertainties regarding the EIS/EIR analyses or the proposed activities.

#### Comment 03

1. Significant after mitigation - In the Summary document, there are 46 findings for "significant after impact" of which 46 are "not significant" and five have "no adverse effect." One must assume that this is a 100 percent pure project, Section 7 notwithstanding.

#### Response 03

1. A primary purpose of the Draft EIS/EIR is to identify potential impacts of the Proposed Action on the environment and indicate the manner in which those effects can be mitigated or avoided. In the evaluation of the Castle Mountain Project, as potential impacts were identified, measures were incorporated in the project design to mitigate or avoid each impact. That the Draft EIS/EIR (Chapter 1.0, Summary) indicates "not significant," with application of mitigation measures, reflects the success of the environmental process in reducing potential project impacts to an acceptable level, as required by environmental regulations.

#### Comment 04

1. Socio/economic section does not address the decreasing price of gold or the costs to taxpayers to retrieve its own gold from off shore.

#### Response 04

1. The Draft EIS/EIR socioeconomic analysis (Section 5.11), was designed to assess if potential environmental effects would occur as a result of growth induced by the proposed project. No significant effects were identified.



2. The Commenter's concern about the cost to taxpayers for a decreasing gold price is not appropriate in the context of the environmental analysis for this proposed project.

#### Comment 05

1. BLM has much flexibility and authority such as in Bonding (3.2.8.3) and Geology (4.1) and in sacrificing a desert tortoise population to support the Searchlight Route.

#### Response 05

1. Mitigation measures are defined in the Draft EIS/EIR (Section 5.5, Wildlife) to avoid impacts to the desert tortoise. No significant impact to the Piute Valley desert tortoise population would occur as a result of the Searchlight Access Route, as described in the Draft EIS/EIR, or the Mitigated Searchlight Access Route as described in the Supplement (Section 3.2.1). See also Section 4.1.6 (Wildlife) of this Final EIS/EIR for additional information on the centered status of the desert tortoise.
2. See Draft EIS/EIR (Section 3.2.8.3, Bonding) and Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for discussions of bonding.

#### Comment 06

1. BLM apparently did not direct Environmental Solutions, Inc. to include material on surveys, polls, findings of the President's Commission on Outdoor Recreation and the Proceedings of the International Conference on Outdoor Ethics (November, 1987.) The Castle Mountain Project is a single-interest, non-renewable proposal; it does not meet BLM policy for multiple use, sustained yield. No findings have been presented to identify Castle Mountain as an overriding public benefit.

#### Response 06

1. The FLPMA directs that, among its many goals and objectives, public lands be managed in a manner:
  - "that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use" (43 U.S.C. § 1701, (a)(8)).

and

- "which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands including implementation of the Mining and Minerals Policy Act of 1970 (84 Stat. 1876, 30 U.S.C. 21a) as it pertains to the public lands..." (43 U.S.C. § 1701, Section 102(12))

The BLM manages these lands in accordance with the permitted principal or major uses which "includes, and is limited to domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation, and timber production." FLPMA, except where specifically provided, does not amend the Mining Law of 1872 (see 43 U.S.C. § 170(a)(12)).

#### Comment 07

1. Summary - The DPC finds the Draft EIS/EIR to be incomplete, inadequate, internally conflicting and biased to an unacceptable degree. The dual responsibility of County/BLM is of deep concern. Proof is lacking that Castle Mountain is an over-riding public benefit.
2. The Final EIS/EIR must:
  - Identify an accountable, permanent Lead Agency.
  - Present all MOUs, agreements *et al.* for public review.
  - Include all impacts and findings required by NEPA and CEQA.
  - Include maps and details, now, for all "shall be" items.
  - Make public the terms and conditions of completion bonds and letters of credit including names/addresses of institutions backing bonds/letters.
  - Outline details for action/s when project is abandoned prior to completion.

#### Response 07

1. A finding of overriding considerations (14 CCR § 15092)) only applies if a significant effect is determined.
2. See Response No. 01 regarding Lead Agencies.
3. The Memorandum of Understanding between the BLM and County is a matter of public record and can reviewed at:
  - Bureau of Land Management  
California Desert District Office  
1695 Spruce Street  
Riverside, CA 92507



The Desert Protective Council, Inc.

or at

- County of San Bernardino  
Land Management Department  
385 N. Arrowhead Avenue, 3rd Floor  
San Bernardino, CA 92415-0182

4. The Final EIS/EIR identifies the potential environmental impacts, in accordance with NEPA and CEQA. Findings on the document will be provided by the BLM and County at the time of their decision. See Section 1.2 (Final EIS/EIR Requirements) of this Final EIS/EIR for a discussion of the requirements for CEQA findings.
5. See Response No. 03 regarding "shall be" terminology.
6. The terms and conditions, and other applicable information on bonding for the Castle Mountain Project will be available as a matter of public record. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for a more detailed discussion of bonding requirements. The purpose of the bond will be to ensure completion of reclamation activities to the satisfaction of the BLM and County. This would include completion of required activities should the project be abandoned prior to completion.

#### Comment 08

1. As an act of good faith, the Final EIS/EIR should include an outline of steps for citizen participation, protest, accord, and legal action.

#### Response 08

1. Citizen participation in the environmental review process has been provided for through scoping meetings, public hearings, and circulation of the Draft EIS/EIR and Supplement. Additional public input in the Final EIS/EIR can be submitted to the BLM and County prior to their decisions on the project.
2. Any person aggrieved by a decision of the County Planning Commission may file an appeal to such decision at the office of the County Recorder. Appeals to the Planning Commission decisions must be filed within 14 days following the action.
3. Any person aggrieved by a decision of the BLM may file an appeal to the decision. Appeals must be filed within 30 days following the Record of Decision. Appeals shall be filed to the BLM California State Director.



4. The steps for legal action cannot be identified at this time since the specific concern for which action would be taken by the Commenter are not known.

#### Comment 09

1. A housekeeping suggestion: key numbers in Table 1.1 to numbers in document.

#### Response 09

1. The Draft EIS/EIR (Table 1.1.1, the Summary of Potential Effects and Mitigation Measures) is formatted in the same order as the issues that are addressed throughout the document. A different numbering system was used so that potential impacts, mitigation measures, and significance after mitigation could be directly correlated.

#### Comment 10

1. Many members know the area well, have spent hundreds of hours enjoying it in a non-consumptive manner.
2. The DPC Directors support the "no action" alternative as being consistent with the policies and goals, especially preserving Congressional options on WSAs, land use, clean air, national park status, and ground water.

#### Response 10

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval/denial.
2. Based upon the location of the project and the Draft EIS/EIR evaluations (Section 4.10 and 5.10, Land Use), the Castle Mountain Project would not affect the wilderness values of WSAs in the region or their potential designation as wilderness by Congress.
3. See the Draft EIS/EIR, Sections 4.3 and 5.3 (Water Resources) and Sections 4.6 and 5.6 (Air Quality) regarding clean air and ground water.
4. See Section 4.1.7 (Land Use) of this Final EIS/EIR regarding national park status.

## LETTER 4: DESERT SURVIVORS

Comment 01

1. Desert Survivors has many concerns about the Draft EIS and believes it is inadequate. First, BLM is well aware that Senator Alan Cranston and Representative Mel Levine have authored and introduced legislation in Congress to transform the East Mojave National Scenic Area, in which the Castle Mountain Project is located, into a National Park. This proposal has attracted a broad range of support. It is inexcusable that the Draft EA (*sic*) fails to discuss the impact of the Castle Mountain Project on that park proposal.

Response 01

1. In preparing the Draft EIS/EIR for the proposed Castle Mountain Project, the BLM recognized that the "California Desert Protection Act of 1986" had been reintroduced to the 100th Congress as S11. However, at this time, such legislation, which would require a significant legislative change, is in its formative stage. In the event that legislation of some kind is enacted, its final form could be substantially different from that originally proposed. The possibility of modification is very real, especially in light of the concurrently pending bill from Congressman Lewis (HR 3460) and other proposals which differ substantially from S-11. Moreover, there is no indication as to the specific effect of future legislation on the EMNSA. An attempt to address the Proposed Action in this context would therefore be speculative. Such speculation in the context of an EIS/EIR would provide little useful information. The BLM will continue to manage the EMNSA under the framework of existing public land laws and regulations until Congress takes action on the various forms of legislation proposed for the California desert.
2. This subject is also discussed in Section 4.1.7.2 (Proposed Mojave National Park) of this Final EIS/EIR where it is noted that enactment of national park legislation would not necessarily preclude mining. However if the Commenter is suggesting that such legislation *would* preclude the Castle Mountain Project, then his concerns for addressing the environmental effects of such action have been satisfied in the Draft EIS/EIR in the discussions on the No Action Alternative.

Comment 02

1. Second, the 1980 Desert Plan under which BLM manages the EMNSA designates that area as Class L, which is defined as activities of low intensity. By no stretch of the imagination is the Castle Mountain Project a low intensity use of the land. Because the Desert Plan was

formulated pursuant to the Federal Land Policy and Management Act of 1976, which expressly amends the 1872 Mining Law, the Class L limitation provides a legal basis for denial of the Castle Mountain Project.

Response 02

1. As explained in the Draft EIS/EIR (page 4.10-2):

"The Multiple-Use Class L (Limited Use) designation has been applied to nearly 50 percent of BLM managed land within the CDCA, including the proposed Castle Mountain Project site, most of the Castle Mountains, and Lanfair Valley. This designation generally limits activities to 'lower-intensity, carefully controlled multiple use of resources' to protect sensitive, natural, scenic, ecological, and cultural resource values. Mining and mineral exploration uses are permitted in Class L areas, subject to 43 CFR 3809 Regulations, and applicable State and local law."

2. The Draft EIS/EIR has evaluated the proposed project in the context of Multiple-Use Class L guidelines and the EMNSA Management Plan. Many of the proposed mitigation measures, especially with regard to visual resources, were developed specifically for project compatibility with Class L guidelines as they relate to the EMNSA. However, it should be noted that the Class L designation does not control mining claims.
3. See Section 4.1.7.1 (East Mojave National Scenic Area Plan Compatibility) of this Final EIS/EIR for a further discussion of the Castle Mountain Project compatibility. The CDCA Plan issued by BLM in 1980 recognizes as a general goal the need to maintain as much land as possible for mineral exploration and development with regard to Group I and Group II minerals. Gold is a Group II mineral.

Comment 03

1. Third, independently developed data indicates that the proposed ground water pumping for the Castle Mountain Project would adversely affect Piute Springs, which is a Federal Reserve water source located in a Wilderness Study Area. This would violate Section 603(c) of FLPMA (43 U.S.C. § 1782(c) *et seq.*).

Response 03

1. The hydrologic studies completed for the Draft EIS/EIR (Section 5.3, Water Resources) were independently developed under the direction of the BLM and County as an impartial evaluation of the potential environmental consequences of the Castle Mountain Project on Piute Spring. That analysis has determined that the proposed ground water pumping would not affect Piute





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Spring. Therefore Section 603(c) of FLPMA, which requires BLM to conduct a wilderness study of certain public lands, is not violated. See also Section 4.1.5 (Water Resources) of this Final EIS/EIR.

2. Concerning independently developed data, no such information has been presented respecting the potential impact of ground water pumping for the Castle Mountain Project upon Piute Spring.
3. For a review of the various opinions expressed on Piute Spring, see Section 4.3.12 (Letter 8.1: The Sierra Club Legal Defense Fund/Curry) and Section 4.4.1 (Letter 9: George Hague and Letter 14: Thomas Myers) of this Final EIS/EIR.

Comment 04

1. Fourth, granting the rights of way for the water supply pipelines for the Castle Mountain Project would not be in the public interest as is required for approval under Title V of FLPMA and the right of way regulations at 43 C.F.R. § 2809 [(sic), 2800]. This mine is an inappropriate use of the land and water resources of EMNSA, and BLM should exercise its discretion to deny rights of way for such a use.

Response 04

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of opinions on project approval.

Comment 05

1. Fifth, the analysis of backfilling the open pits as a visual resource mitigation alternative is conclusory and inadequate. Specific data about the cost of such backfilling must be provided. Also, the claim that the mining law mandates that the pits be left open for possible future mining is legally frivolous.

Response 05

1. SMARA and 43 CFR 3809 include provisions for not backfilling, if evidence of mineralization exists, as discussed in the Draft EIS/EIR (page 3.3-4). This protection of mineral resources has been recognized for this project by the Bureau of Mines (see Section 4.2.1.1, Letter 3: U.S. Department of the Interior, Bureau of Mines, of this Final EIS/EIR). The Draft EIS/EIR does not indicate that mining law mandates the pits be left open.

2. Further discussion on the issue of backfilling (including the environmental and mineral resource costs of that activity) is included in Sections 3.3 (Alternative Mitigation Measures Considered) and 4.1.4.1 (Mine Pit Backfilling) of this Final EIS/EIR.

Comment 06

1. Sixth, inadequate analysis is provided about wildlife mortality from the cyanide leach ponds. It does not appear that BLM can assure that the Castle Mountain Project would comply with the Migratory Bird Treaty Act.

Response 06

1. The Applicant will be required to comply with pertinent Federal and State laws, including the MBTA (16 U.S.C. § 703 *et seq.*). Potential project effects on migratory and resident birds were identified in the Draft EIS/EIR (Section 5.5, Wildlife).
2. The Draft EIS/EIR describes measures that are designed to isolate cyanide processing solutions from wildlife and which would be incorporated into the project. These measures include fencing, netting, drip irrigation, and solution piping, as stated in the Draft EIS/EIR (pages 6.5-2 and 6.5-3), as well as enclosed steel tanks, as described in Section 3.1 (Final Project Design) of this Final EIS/EIR. It is expected that these physical isolation measures will be adequate to enable project operations to satisfy the MBTA requirements.
3. The BLM requires monthly reporting of each wildlife mortality attributable to cyanide, and thus will monitor the project to ensure compliance with the MBTA.

Comment 07

1. Seventh, too little attention is paid to the issue of desert tortoises. As you know, the desert tortoise population is in decline throughout the California Desert. The Castle Mountain Project, and especially the vehicular traffic associated with it, would likely contribute to that decline. The posting of signs, modest fencing and "driver awareness" are not enough to mitigate against this impact.

Response 07

1. Draft EIS/EIR (Section 5.5, Wildlife) provided an analysis for the desert tortoise that is commensurate with the degree of impact that could occur from the proposed project. Based

## Desert Survivors

upon consultation with agencies and experts on the desert tortoise, it was concluded that the proposed measures would adequately mitigate the potential for the project to affect the population status of the desert tortoise.

2. The Supplement (Section 3.1.1, Threatened and Endangered Designation for Desert Tortoise) provided a discussion of the desert tortoise listing which occurred subsequent to the release of the Draft EIS/EIR. See also Section 4.1.6 (Wildlife), of this Final EIS/EIR for an update on the legal status of the tortoise, BLM formal consultation with FWS on the project, and the FWS Biological Opinion.

Comment 08

1. Finally, if the Castle Mountain Project proceeds, a substantial bond must be posted to ensure reclamation. We recommend a bond in the range of \$5-10 million.

Response 08

1. As discussed in the Draft EIS/EIR (Section 3.2.8.3, Bonding), specific bonding amounts would be determined based upon the prevailing costs for reclamation of project disturbances at the time reclamation is to be completed. The BLM and County would annually re-examine the adequacy of the allocated amount. In this manner, bonding would be maintained at a level that would ensure that reclamation would be completed to the satisfaction of the BLM and County.
2. A preliminary estimate of reclamation costs that will be used to assess bonding is included in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.



## LETTER 5: THE DESERT TORTOISE COUNCIL

Comment 01

1. Page 1.6-6. The No Action Alternative is rejected as a viable alternative unless the mining operation would result in "unnecessary and undue degradation" of the environment. The Council believes that rejecting the "no action alternative" under this criterion is inappropriate. Such an option is available only for the activities occurring on the mining claims as regulated under the 43 CFR 3800 regulations. Proposed activities of claims that would be approved through a Title V Right of Way under the Federal Land Policy and Management Act, namely access roads, power lines, wells and pipelines are discretionary actions and their approval or denial cannot be based upon the "unnecessary and undue" criterion because its definition and use are strictly limited to the regulations governing locatable mining activities.
2. We recommend the BLM review its authority and responsibility for granting the proposed Rights of Way for access roads, pipelines, power lines and wells and develop criteria for their approval or denial that are not inappropriately linked to the 43 CFR 3800 regulations.

Response 01

1. Title V of FLPMA, as implemented by 43 CFR 2800, gives discretion to the Secretary of the Interior to grant rights-of-way and directs the Secretary to consider a number of factors, including protection of natural resources, land use plans, national security, etc. Under the Mining Law of 1872 and FLPMA the Applicant has the right to an access road to the mine, without the necessity of obtaining a FLPMA Title V permit (43 U.S.C. §1761 *et seq.*).
2. A Title V permit would need to be obtained for pipelines and electrical lines outside the project site boundaries.

Comment 02

1. Page 1.1-8. An analysis of the impact of existing and historical land uses on the desert tortoise and its habitat should be provided. Not all the identified cumulative impacts are those that would result from the proposed action. For example, to what degree has the desert tortoise population in Lanfair Valley and the general project area been impacted by livestock grazing, etc.?

Response 02

1. As explained in the Draft EIS/EIR (Section 8.0, Cumulative Impacts), past, present and reasonably anticipated future conditions, including illegal collecting, vandalism, predation, disease, and livestock grazing, have been considered as part of the environmental analysis. The current status of the tortoise in the vicinity of proposed project activities, is identified in the Draft EIS/EIR (Section 4.5, Wildlife) and Section 4.1.6.2 (Desert Tortoise) of this Final EIS/EIR. Since the effects of the Castle Mountain Project would be mitigated or avoided, the project would not contribute to cumulative effects on the desert tortoise.

Comment 03

1. Page 1.1-11. The long period of time (30 to 60 years) anticipated for recovery of vegetation on disturbed areas should be considered a significant impact. Furthermore, it is unlikely all disturbed areas will recover at the same rate, and some may not recover for very long periods of time, (due) to the lack of soil and the effects of erosion by wind and water, invasion by exotic species, etc.

Response 03

1. The length of time for recovery of onsite vegetation to a community similar to pre-disturbance conditions is not considered an indicator of the significance of project impacts on vegetation. The Draft EIS/EIR criteria for determining significance of impact on vegetation included:
  - Substantially affect a threatened or endangered species or its habitat.
  - Substantially diminish habitat for a plant species.

The analyses completed for the Draft EIS/EIR (Section 5.5, Wildlife) determined that applying these criteria to the Castle Mountain Project supports the conclusion that no significant effect would occur.

2. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR regarding onsite vegetation recovery rates.

Comment 04

1. Page 1.1-12. The Council supports employee briefings and training about the status of and need to protect the desert tortoise. In addition, we strongly encourage the use of sufficient numbers of inspectors/compliance officers to ensure conformance with project stipulations and regulations for protection of the desert tortoise.

Response 04

1. Employee training would be completed in compliance with the recommendations in the Draft EIS/EIR (page 6.5-2).
2. Mitigation compliance monitoring will be implemented in accordance with environmental regulations, as discussed in the Supplement (Appendix E, Draft Mitigation Compliance Program), and in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

Comment 05

1. Page 1.1-12. The DEIS should contain information regarding the techniques used to assess the desert tortoise population in the project area plus the results of the surveys. Merely stating that some active tortoise burrows were noted in the project area is inadequate considering the biological status of the tortoise.

Response 05

1. The Draft EIS/EIR evaluation of onsite burrows consisted of identifying potential burrows onsite. Since no sign was observed, it was determined that the tortoise population in this area was limited. This finding was consistent with previous investigations of the distribution and diversity of tortoise populations (Berry, 1984).
2. Subsequent to the Federal and State listings of the tortoise, the site was again visited to map the location of each potential burrow. The methods and results of additional onsite surveys for the desert tortoise were discussed in the Supplement (Section 3.1.1, Project Site Tortoises).
3. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a further discussion of the methods and results of onsite burrow investigations.

Comment 06

1. Page 1.1-13. A more thorough impact analysis of noise generated at the project site and by vehicles accessing the area should be conducted. At the Desert Tortoise Natural Area in the western Mojave Desert, the BLM requested that Kern County limit vehicle noise entering the Desert Tortoise Natural Area from a proposed vehicle test track for protection of the desert tortoise and its habitat. The County, in turn, required that the maximum sound pressure level entering the Natural Area not exceed 45 dBA. We would like to emphasize that the BLM



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stated that 45 dBA was an interim level because additional research is required to more fully understand the tortoise's requirements for low-noise conditions for predator detection and vocal communications.

2. The DEIS should address whether or not increases in vehicular traffic to and from the project area in both Ivanpah and Piute Valleys result in a significant increase in the noise levels that may adversely impact the desert tortoise.

Response 06

1. In light of the current location of the Mitigated Access Route outside Category 1 habitat, traffic and associated noise effects on the desert tortoise are not expected to be significant. Noise from the intermittent passage of vehicles would be a short term effect localized along the access road. The limited 108 ADT and 35 mph speed limit would not be expected to produce an average noise level exceeding 45 dBA at about 800 feet from the roadway for the maximum morning 1-hour traffic period. Additional data on this subject may be found on page 4-91 of this Final EIS/EIR.

Comment 07

1. Page 1.1-13. Monitoring of raven populations in the project area does not, by itself, constitute mitigation should their numbers increase significantly due to the project. Rather, if an increase is detected, the BLM should be prepared to implement a specific plan for reductions of ravens to pre-project levels. Such a plan should be in place and approved for implementation prior to project construction.

Response 07

1. No increase in raven populations is expected as a result of Castle Mountain Project activities as discussed in the Draft EIS/EIR (Section 5.5, Wildlife). Monitoring of their local populations by the project is intended to help BLM's program to assess the degree to which raven predation could be a problem in the East Mojave Desert.
2. The BLM is developing a program to reduce raven population levels by selective poisoning in the Mojave Desert (BLM *et al.*, 1989). Implementation of that program is currently being considered.

Comment 08

1. Posting speed limit signs will probably be ineffective in slowing traffic speed. An effective enforcement program needs to be developed and implemented. Vehicle speed reductions through signing and project stipulations have been ineffective in slowing vehicle speed in at least two other mining operations in the Mojave Desert on public land. How could the BLM and the project proponent possibly limit vehicle speeds in tortoise habitat as a whole considering the large acreage and distances involved?

Response 08

1. As the majority of project traffic will be restricted to bus/van pooling, proper adherence to posted speed limits would be more easily controlled. While reducing the speed of other traffic as a whole would also be desirable, it is recognized that public traffic is beyond the control of the Applicant. BLM has observed that while lowering speed limits on access roads has not assured that every vehicle adheres to the posted limit, it *has* slowed down traffic. The BLM monitors vehicle speeds on public roads on a regular basis, and especially during periods of intensive use, such as on holiday weekends.

Comment 09

1. We are pleased to see the requirement for fencing and culverts within crucial tortoise habitat. We recommend monitoring to determine if culverts are used by tortoises during the life of the project. Studies of tortoise distribution and density in crucial habitat adjacent to the access roads should be determined before the project is implemented and monitored annually for the duration of the project to determine if the increased traffic has displaced tortoises from their territories.
2. If adverse impacts are detected, additional mitigation should be implemented to avoid additional loss of tortoises.

Response 09

1. As a result of public comment on the Draft EIS/EIR the planned location of the preferred access was changed to avoid travel through Category 1 habitat. As a result, desert tortoise fencing and culverts are no longer being recommended (see Supplement Section 3.2.1, Mitigated Searchlight Access Route).
2. See Section 4.1.6.2 (Desert Tortoise) for additional information on the current status of the desert tortoise.

Comment 10

1. Page 1.1-18 - Under mitigation, there is a provision for relocation of livestock waters if they become impacted by the proposed project. Under the BLM's Rangewide Plan for the desert tortoise, there are constraints on the addition of new water sources into desert tortoise habitat due to the impact of livestock congregation and trampling and possible increase in predators of the desert tortoise.

Response 10

1. Comment noted. Livestock watering facilities would be relocated, if necessary, in the vicinity of the existing source and would not be expected to create new impacts on the desert tortoise. Relocation would be completed under the supervision of BLM and coordinated with FWS and DFG.

Comment 11

1. Page 2.4-1,2 - The relationship of the Federal Endangered Species Act to the California Endangered Species Act should be stated. Under the latter law, the desert tortoise, as a candidate for listing as threatened in California, is to be treated as if it were listed until such a time that the California Fish and Game Commission determines that listing is not warranted.

Response 11

1. Comment noted. See the Supplement (Section 3.1.1.1, State and Federal Listing), and Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussions on the current status of the desert tortoise.
2. BLM policy is to treat species proposed for listing in a such a way that impacts to the species would not increase. The Draft EIS/EIR therefore included numerous mitigation measures to limit potential impacts on the tortoise to the maximum degree possible, even prior to its State or Federal listings.

Comment 12

1. Page 2.5-5 - Again, as stated above, tortoise relocation, if required by BLM, should be conducted according to a plan with concurrence from tortoise biologists in the BLM and Department of Fish and Game. Also, as noted previously, raven monitoring, by itself, does not constitute mitigation should a significant increase in ravens occur.



Response 12

1. Comment noted.
2. Tortoise relocation would be accomplished under guidelines acceptable to the BLM and as specified in the FWS Biological Opinion (see Appendix G).

Comment 13

1. Page 3.2-46 - How will *one* environmental specialist monitor the effectiveness of wildlife mitigation measures? The Council is concerned about the adequacy of this monitoring program. A monitoring program should be developed and approved by biologists in the BLM and sufficient funding committed for implementation.

Response 13

1. The Draft EIS/EIR does not specify the number of environmental specialists/consultants that would be required to demonstrate monitoring compliance. It will be necessary for the Applicant to provide whatever level of effort is needed to demonstrate compliance with project mitigation measures, in accordance with NEPA and CEQA requirements and the Castle Mountain Project Mitigation Compliance Program.

Comment 14

1. Page 3.4-1 - The impact analysis of the access route options is based only on direct habitat disturbance (two percent or 20 acres.) However, the effects of vehicle noise and intrusion into tortoise habitat could result in impacts considerably beyond the limits of the road bed. Indirect impacts should also be evaluated.

Response 14

1. The Draft EIS/EIR did consider both the direct and indirect effects of project traffic on the desert tortoise. However, the minimal noise that would be associated with the limited project traffic was not considered an important issue. As discussed above in Response No. 06, the limited noise effect anticipated from project traffic is not expected to significantly affect the desert tortoise.

Comment 15

1. Page 3.4-3 - Again, the use of the "unnecessary and undue" criterion is appropriate only for use with the 43 CFR 3800 regulations for locatable mineral development on mining claims and not in conjunction with Title V Rights of Way under the Federal Land Policy and Management Act.

Response 15

1. See Response No. 01.

Comment 16

1. Page 4.5-5 - Please note that the California Fish and Game Commission is considering listing the desert tortoise as a threatened species throughout California, and thus, it is a candidate for listing. In addition, the U.S. Fish and Wildlife Service has determined that listing of the desert tortoise under the Endangered Species Act throughout its range is warranted but precluded by higher priority listing actions.

Response 16

1. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussion of the current status of the desert tortoise.

Comment 17

1. Page 5.5-1 - The 20 acres of habitat lost due to the upgrading of the Searchlight road access plan is a direct loss, but secondary losses will occur that are not accounted for. Please address the impacts to desert tortoises and their habitat resulting from increased noise and intrusion into the habitat. We suggest that a starting point include a review of the study of the effect of roads on desert tortoises conducted by Nicholson.

Response 17

1. See Response Nos. 14 and 16. Indirect or secondary effects of project traffic were considered in the preparation of the Draft EIS/EIR analysis. A discussion of such effects as studied by Nicholson was included in the Draft EIS/EIR (page 5.5.8).

Comment 18

1. Page 5.5-3 - Relocating tortoises is not a proven mitigation. Studies of relocated tortoises by the Department of Fish and Game indicate that significant levels of mortality and long-distance movements occur. Any relocation of tortoises as mitigation should be considered

experimental and conducted under the guidelines of a plan that has been accepted by tortoise biologists from the Bureau of Land Management and the Department of Fish and Game.

#### Response 18

1. Given the negative results from the onsite search for tortoises (see Section 4.1.6, Wildlife, of this Final EIS/EIR) it is unlikely that relocation of tortoises would be necessary. However, even in the event that a tortoise is found onsite, no long distance tortoise relocation would be necessary. Tortoises would only need to be located in adjacent offsite areas to be safely removed from project activities.
2. See Response No. 12 concerning tortoise relocation.

#### Comment 19

1. Revegetation efforts will not result in a repopulation of a disturbed area by wildlife to pre-project levels. The process of revegetation is slow and occurs in stages, and wildlife diversity and abundance is directly related to this process. Wildlife occurrence on the revegetated areas may not match pre-project levels for very long periods of time, perhaps as much as 60-100 years or more.

#### Response 19

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR regarding revegetation recovery rates. While it was recognized in the Draft EIS/EIR that repopulation of disturbed areas by wildlife would be a function of revegetation rates, it is also recognized that each successional stage of a plant community provides habitat useable to wildlife. No significant impact to wildlife species is therefore expected.

#### Comment 20

1. Page 5.5-11 - We are pleased to read that fencing of crucial tortoise habitat is proposed to eliminate direct mortality due to vehicle traffic. However, we believe that additional impacts may result adjacent to roads from increased noise and intrusion into the habitat. Defining pre-project desert tortoise populations in the crucial habitats within 0.5 miles of the proposed access roads and monitoring those populations annually for the life of the project is very important.

#### Response 20

1. See Response Nos. 06 and 09.





Comment 21

1. We disagree with the option of depositing funds in a BLM account equivalent to the amount that would be required for the fencing mitigation to fund alternatives such as habitat enhancement, land acquisition, or studies. The mitigation should be implemented for this particular project. Studies are not within the definition of mitigation or compensation.

Response 21

1. Mitigation Measure No. 5, as stated in the Draft EIS/EIR (page 6.5-4), recommends that:
  - "At the discretion of BLM, funds equivalent to the calculated fencing costs could be contributed by the Applicant as an alternative to fencing, for use in habitat enhancement, land acquisition, or studies to benefit the desert tortoise."

This recommendation is consistent with the BLM *Recommendations for Management of the Desert Tortoise in the California Desert*, July 1988. This provision was included to provide the BLM with some flexibility in determining how the desert tortoise mitigation funds for this project could be best used to benefit the species. For example, it may be preferable to have the required length of fencing constructed along heavily used roadways in crucial habitat, instead of along seldom or lightly traveled roads in the marginal habitat in the vicinity of the project site. Similarly, use of the funds for purchase of land, or funding for improved management of crucial desert tortoise habitat, may provide for greater overall enhancement of the species.

2. FWS has recommended in their Biological Opinion (see Appendix G) that the funds be used for land acquisition. Determination of the best lands for acquisition will be made by BLM in coordination with FWS, DFG, and the Nevada Department of Wildlife.

Comment 22

1. Regarding compensation, we are particularly alarmed that there is no mention in the DEIS for compensation for habitat losses and impacts of the desert tortoise due to this project. We strongly recommend compliance with the Tortoise Workgroup Report for the California Desert Conservation Area for compensation for impacts to tortoise habitat. The option of deleting the requirement for fencing both sides of the access roads the crucial habitat (*sic*) and purchasing offsite habitat for the tortoise is circumventing the compensation process for losses or impacts to crucial tortoise habitat.

Response 22

1. The proposed project would not affect crucial tortoise habitat (now known as Category 1 habitat) The Draft EIS/EIR recommended mitigation measures that would reduce potential impacts to the tortoise below a level of significance, in accordance with NEPA and CEQA. However, as a result of the Federal and State listings, BLM will require that compensation be provided in the form of compensation as discussed in the Biological Opinion issued by the FWS (see Appendix G).

Comment 23

1. The guzzler in the area of the Searchlight access road, if located within or adjacent to tortoise habitat, should be relocated to an area free of tortoises due to the potential for adverse impact to tortoises due to increased predator populations and activities and drowning in the guzzler tank.

Response 23

1. Comment noted. The wildlife guzzler near the Searchlight Access Route is not currently within desert tortoise habitat, nor is it adjacent to the Mitigated Access Route described in the Supplement. Accordingly, this guzzler would not be relocated.

Comment 24

1. Page 6.4-2 - Stockpiling soil should only be done on previously disturbed areas that are not in a recovery stage. Where would the stripped vegetation be located and what measures would be employed to minimize the loss of soil due to wind and water erosion?

Response 24

1. To the degree possible, soil would be stockpiled in previously disturbed areas or, preferably, distributed over decommissioned areas as it is stripped from other areas. However, some disturbance would be required for large quantities of soil, such as from the area of the heap leach pads. Stripped vegetation most likely would be located within the soil stockpile areas indicated in the Draft EIS/EIR (Figure 3.2.5, Preliminary Site Plan). The stockpiles would be contoured, mulched, and reseeded to minimize erosion.

Comment 25

1. Page 6.4-3 - We recommend that any vegetation salvage sales be conducted by the BLM with funds provided by the mining company and not with public funds.

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Response 25

1. Comment noted.

Comment 26

1. Page 6.5-1 - Please note that the desert tortoise is under consideration for listing as threatened under the California Endangered Species Act by the California Fish and Game Commission and is afforded special consideration and protection under the provisions of the California Endangered Species Act and the California Environmental Quality Act.

Response 26

1. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for an update on the status of the tortoise.

Comment 27

1. Page 6.5-3 - We believe that any relocation of desert tortoises be done by qualified personnel acceptable to the BLM and Department of Fish and Game and not the mining operations staff. Furthermore, we believe a qualified instructor acceptable to the BLM and the Department of Fish and Game should be instructing mine project staff regarding the proper handling techniques for moving desert tortoises off a road or within the operations area.

Response 27

1. Comment noted. If relocation is necessary it would be completed only by qualified individuals in accordance with procedures acceptable to FWS, DFG, and BLM. Project personnel would be instructed on proper desert tortoise mitigation measures.

Comment 28

1. We believe the "buffer distance" needed between tortoise burrows and mine operations should be determined by biologists and acceptable to the BLM. Again, the effect of vehicular traffic on roads within tortoise habitat can be significant as documented by field studies conducted by Nicholson.

Response 28

1. Comment noted. Determination of which tortoises, if any, need to be relocated will be determined by a qualified biologist acceptable to the BLM and FWS. See also FWS requirements on this issue as set out in the Biological Opinion (Appendix G).



Comment 29

1. Page 6.5-4 - We suggest that a one-week interval be established for the inspection and maintenance schedule for tortoise fences and culverts.

Response 29

1. If tortoise fencing and culverts are used in conjunction with this project, the specific interval for inspection at fences and culverts will be based on field experience and will be conducted as needed to maintain proper fence function. Based on the access route relocation, as described in Section 3.1 (Final Project Design) of this Final EIS/EIR, which avoids Category 1 tortoise habitat, fencing and culverts along the access route are no longer necessary.

Comment 30

1. The Applicant should conduct tortoise inventories through the use of a contractor acceptable to both the BLM and the Department of Fish and Game. Tortoise inventories should only be conducted by qualified biologists and conform to standards for surveys established by the BLM and the Department of Fish and Game.

Response 30

1. Comment noted. Onsite tortoise surveys have been completed by qualified BLM staff, and consultants acceptable to BLM and FWS.

Comment 31

1. We are again alarmed over the suggestion that the culverts under the access roads in crucial tortoise habitat only be installed after three years of monitoring and only if an adverse impact is documented. If impacts are documented within three years, it would not be related to tortoises being unable to cross from one side of the road to the other. Rather, such an impact would be due to vehicle noise and intrusion into the habitat. Culverts are necessary for maintaining biological continuity within a population and allowing for movements of individuals.

Response 31

1. Since studies to determine the actual use and need of culverts have been lacking, the Draft EIS/EIR recommended that the need for these facilities be evaluated to determine an appropriate interval.

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2. As noted in Response No. 09, since the planned access route has been relocated outside of Category 1 habitat, desert tortoise fencing and culverts are no longer being recommended (see Supplement Section 3.2.1, Mitigated Searchlight Access Route).

Comment 32

1. Again, we do not believe that BLM should collect from the operator the funds required for fencing the access roads in crucial tortoise habitat and then use them for general habitat enhancement, land acquisition for additional studies. The reasons for our position on this portion of the DEIS have been stated previously.

Response 32

1. See Response No. 21.

Comment 33

1. Page 6.5-5 - Garbage collection areas should have an onsite caretaker to ensure that dumpster lids remain closed and that overflow garbage be disposed of properly and in a timely manner.

Response 33

1. Comment noted. Mitigation Measure No. 1 in the Draft EIS/EIR (page 6.5-5) provides for proper management of garbage.

Comment 34

1. Page 6.8-3 - Little analysis of the impact of the proposed natural gas pipeline following the Searchlight Access Road has been done. We believe it is necessary to determine the direct and indirect impacts to tortoise habitat due to this portion in the DEIS.

Response 34

1. The Draft EIS/EIR (Section 3.2.5.2, Power Requirements and Supply) explains that the natural gas pipeline would be constructed within the alignment of the Searchlight Access Route to limit additional disturbance. Since the pipeline, if eventually constructed, would be installed within the alignment of existing roads, no direct or indirect impact to desert tortoise habitat is expected.

Comment 35

1. Page 7.1-2 - Please note that recovery of wildlife in disturbed areas would vary depending on the degree of success of the reclamation efforts and would not occur at the conclusion of the project activities. Wildlife recovery will be a very slow process and may require very long periods of time, perhaps 60-100 years or more, depending on the species, site characteristics after reclamation/revegetation, etc.

Response 35

1. See Response No. 19.

Comment 36

1. Page 8.3-4 - We are alarmed to read that the project proponent and the BLM consider that implementing the Castle Mountain Project with the mitigation measures identified in the DEIS would actually benefit the desert tortoise! Mitigation measures are, by definition, capable of reducing impacts, not eliminating them.
2. Loss of habitat, both direct and indirect, is a serious cumulative impact to the desert tortoise. Compensation for losses of tortoises and habitat would allow for their replacement off the project area. However, compensation does not make for more tortoises and tortoise habitat. Incremental losses of tortoises and their habitat are occurring throughout the species range. We find it unfortunate that the DEIS does not contain any provisions for using the compensation program to offset the impacts that would occur to desert tortoise from the Castle Mountains Project.

Response 36

1. CEQA and NEPA provide that mitigation measures are capable of reducing or avoiding potential impacts. If such measures are provided at a level that exceeds the potential impact, the mitigation could result in a net positive effect on the resource. It is believed that the mitigation measures provided in the Draft EIS/EIR for the desert tortoise would provide protection to the tortoise, not only from the project operations, but from other, existing, sources of impact, resulting in a net benefit to the species. This is especially true, given the high degree of mitigation and compensation being recommended relative to the actual tortoises onsite.



Comment 37

1. Sections 2.1 and 2.2 - The impacts identified in these sections will result in a direct loss of desert tortoise habitat and should be compensated for.

Response 37

1. See Response No. 22 regarding tortoise habitat compensation.

Comment 38

1. What criteria will be used to determine the effectiveness of the wildlife mitigation and the revegetation? These criteria should be agreed upon by biologists from BLM and California Department of Fish and Game.

Response 38

1. Mitigation measures proposed in the Draft EIS/EIR for each impact identified to wildlife and vegetation were developed in consultation with experts and agencies based on their experience with implementation of such measures elsewhere. It is therefore believed that each of these measures will be effective. Monitoring to verify implementation compliance will be accomplished as required by NEPA and CEQA, and as specified in the Castle Mountain Project Mitigation Compliance Program (see Supplement Appendix E).

Comment 39

1. The operator proposes to restrict activities during the bat hibernation period which is valuable temporary mitigation measure. However, this will not offset or compensate for the loss of the habitat once the areas are mined.

Response 39

1. The Draft EIS/EIR (Section 5.5.1.1, Facilities Impact on Wildlife) recommended that "if a colony or substantial use of the workings by individuals is found, the workings would not be disturbed until the hibernation period had been complete and the bats had gone." The biological inventories for the Draft EIS/EIR included investigations into the onsite mine shafts to determine the extent to which they are used as habitat for animals such as bats, owls, and ringtails. These and subsequent investigations (completed during both winter and spring seasons), have confirmed that there is no substantial use of the onsite mine workings by bats or other species. No bat hibernal or maternity colonies have been found. While the proposed project would eliminate about 60 percent of the mine shafts and adits, the remaining 40 percent

are considered adequate to support these wildlife species. The shafts and adits that would be affected by the Proposed Action are not unique to this area. Their loss is not expected to have any significant effect on bats, especially in light of their limited use of this area.

#### Comment 40

1. Section 3.2 - The construction of storm drainage berms will result in additional habitat loss which must be compensated for. The operator should be required to phase its operation so that once the activities in one area are completed, the area can be reclaimed and revegetated.
2. The DEIR does not identify how much area will be destroyed by the installation of the wells, service road and pipeline to the mine. Also, a power line will be required and its impacts need to be addressed.

#### Response 40

1. The total area required for storm drainage facilities would be less than five acres. This acreage is included in the acreage calculations for each facility included in the Draft EIS/EIR (Figure 3.2.5, Preliminary Site Plan). See Response No. 22 regarding tortoise habitat compensation.
2. The Castle Mountain Project would be developed incrementally over an approximate 10-year period. Reclamation activities would begin for some areas at project initiation, and in other areas as activities are concluded throughout the project life (see Draft EIS/EIR, page 6.4-2) and the Reclamation Plan (Viceroy, 1990).
3. As described in the Draft EIS/EIR, surface disturbance at each well site would involve an approximate 100-by 100-foot area. "After wells are completed, this area would be reclaimed to an approximate 25- by 25-foot area for the permanent facilities." Removal of vegetation for an access road to two wells as shown on Figure 3.2.9 (Preliminary Utilities Plan), would be limited to a 12-foot wide strip. The water pipeline to the project would be "buried in the shoulder of Hart Mine Road . . ." (Draft EIS/EIR page 3.2-24). No additional surface disturbance is planned as a result of the pipeline.
4. The Draft EIS/EIR also explained that, "the power lines to the West Well Field would also be on overhead poles or would be buried in Hart Mine Road." No additional surface disturbance is therefore planned for the power lines to the West Well Field (Draft EIS/EIR page 3.2-27).

Comment 41

1. Also, the project will require a State Lands Commission permit of use of land of the State of California and, therefore, prior to issuance of the permit the Commission must comply with the State endangered species act. This will require consultation with the Department of Fish and Game and issuance of a biological opinion from the Department.

Response 41

1. California Fish and Game Code Section 2090 requires formal consultation with the DFG and issuance of a State Biological Opinion when a "State agency" is the Lead Agency, as defined under CEQA, not when the Lead Agency is a "local agency", such as the County. Therefore, while a permit from the State Lands Commission will be necessary if the Applicant proposes to drill a water well on State-owned land, the State Lands Commission will be a Responsible Agency under CEQA and no state biological opinion will be required. Nevertheless BLM is consulting with DFG concerning endangered species and has solicited DFG's comments on the Draft EIS/EIR and Supplement.

Comment 42

1. The power transmission poles which will be needed to supply power to the mine may serve as raven nesting and roosting sites. Construction techniques should be used which will discourage raven use.

Response 42

1. Comment noted. A mitigation measure recommending such construction techniques has been included in Section 3.2.1 (Additional Mitigation Measures) of this Final EIS/EIR.

Comment 43

1. The DEIR does not identify the impacts and/or mitigation/compensation measures which will be needed for the construction of a natural gas pipeline from Searchlight, Nevada to the mine site. The California Environmental Quality Act requires that all cumulative impacts in the past, present and reasonable foreseeable future be considered, and this has not been done. The pipeline is definitely in the foreseeable future as the project proponent states that they are planning to use the EIS/EIR to meet the requirements under Title V.



Response 43

1. The proposed natural gas pipeline is identified in the Draft EIS/EIR description of the Proposed Action. As discussed in Draft EIS/EIR (Section 3.2.5.2, Power Requirements and Supply), and shown in Figure 3.2.9 (Preliminary Utilities Plan), the pipeline would be constructed "within the alignment of the proposed Searchlight Access Route." The pipeline would be located in this alignment to "limit additional surface disturbance." A detailed description of the access route location, alignment, and length was provided in the Draft EIS/EIR (Table 3.2.4, Proposed Access Improvements). Expected impacts that would occur from construction and improvements to the 20.3-mile route were addressed under each applicable environmental element in Chapter 5.0 (Potential Environmental Impacts). As no additional impacts are expected from the pipeline itself, no mitigation/habitat compensation is warranted. The Draft EIS/EIR has therefore satisfied both CEQA and NEPA in its evaluation of potential environmental consequences of the natural gas pipeline.

Comment 44

1. Page 3.2-56 - The haul road crossing of the ephemeral streambed and the impacts on vegetation, erosion, and other impacts must be described completely. The operator must obtain a streambed alteration agreement from the Department of Fish and Game prior to any work within the streambed, including, but not limited to, the haul road or diversion ditch.

Response 44

1. The impacts to vegetation that would occur as a result of haul roads and other facilities are described in the Draft EIS/EIR (Section 5.4, Vegetation and shown in Figure 5.4.1, Potential Vegetation Impact). Standard engineering practices would be followed for onsite erosion control. The Applicant will be required to obtain required permits from the DFG under Fish and Game Code Section 1603 and other agencies for the access road crossing the stream bed.

Comment 45

1. The operator proposes to neutralize chemicals onsite and incorporate them into the overburden. This approach is not acceptable as it may cause contamination of the ground water table and may prohibit revegetation. The operator should be required to transport all toxic chemicals offsite to an acceptable dump site.

Response 45

1. Disposal of chemicals in the overburden is not proposed as part of this project. As discussed in the Draft EIS/EIR (page 5.7-5), "small amounts of waste considered hazardous, such as oils and solvents would be detoxified onsite, recycled or packed, and disposed of according to rules and regulations for waste disposal set forth by DEHS" (County Department of Environmental Health Services).

Comment 46

1. The operator should be required to transplant all barrel cactus and Joshua trees or agree to replace any lost trees at a minimum ratio of 25 to 1.

Response 46

1. The Draft EIS/EIR (page 3.2-50) suggests that a goal for transplanting barrel cactus and Joshua trees would be at least 25 percent. The specific ratio that would need to be transplanted will be based on factors that should be determined from onsite experimentation (such as survivability of transplanted specimens versus survivability of planted seedlings, etc.). Some species, or size ranges, do not survive transplantation. It is not believed appropriate to arbitrarily determine a specific transplantation ratio at this time. Replacing each Joshua tree with twenty-five trees would exceed the carrying capacity of the area, and would result in death of the majority of the transplanted trees.

Comment 47

1. The nursery operations should be coordinated with BLM and the Department of Fish and Game biologists. Design and operations should be approved by Fish and Game biologists.

Response 47

1. Nursery operations will be designed by the desert revegetation experts in coordination with the BLM and County, as necessary to achieve the required reclamation in accordance with 43 CFR 3809, SMARA (Cal. Pub. Res. Code § 2170 *et seq.*), and the specific conditions of approval for this project.

Comment 48

1. Page 3.2-8 - The proposed bonding does not include any funds for impacts from the well fields, pipeline, access roads, and possible gas line from Searchlight, Nevada. The bond should be a sufficient amount to cover the cost of replacement of all habitat values that are going to be lost for 30-60 years, the time it may take for the habitat to be restored.

Response 48

1. The bonding requirements will include all surface disturbing activities, including the natural gas pipeline. However bonding would not need to be posted until such time as surface disturbing activities would occur. If the natural gas pipeline is eventually constructed, an appropriate bond will be required. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR, for a discussion of the currently envisioned activities and bonding.

Comment 49

1. Regarding compensation, we are particularly alarmed that there is no mention in the DEIS for compensation for habitat losses and impacts to the desert tortoise due to this project. We strongly recommend compliance with the Tortoise Workgroup Report for the California Desert Conservation Area for compensation for impacts to tortoise habitat. The option of deleting the requirement for fencing both sides of the access roads of the crucial habitat and purchasing offsite habitat for the tortoise is circumventing the compensation process for losses or impacts to crucial tortoise habitat. The fencing should be installed and the purchase of land as acquisition should be done to compensate for lost habitat, not instead of fencing. Furthermore, this fund should be monitored by representatives from all the concerned agencies and groups, not solely by BLM.

Response 49

1. See Response No. 22 regarding tortoise habitat compensation.
2. The BLM will be responsible for monitoring mitigation requirements for desert tortoise fencing on public lands. The results of such monitoring will be available for use by other agencies and interested groups/individuals.



## LETTER 6: NATIONAL PARKS AND CONSERVATION ASSOCIATION

Comment 01

1. If we had our druthers and circumstances were different, we would certainly prefer that mining projects on the scale of the Castle Mountain Project not occur in the East Mojave National Scenic Area (EMNSA). But we recognize the reality of valid existing mineral rights held by the Canadian firm, Viceroy Gold Corporation. We also recognize that this part of the EMNSA is not a naturally pristine piece of landscape; that the proposed project lies within a historic mining district and associated surface disturbances.
2. We are, nevertheless, concerned that the activities of the proposed project, as they may affect the environment, be carefully mitigated to the greatest extent possible--from initial site preparation, through mineral development, to ultimate reclamation.

Response 01

1. Comment noted.

Comment 02

1. The need for safe containment of the cyanide solution used in the heap leaching process--including the protection of waterfowl, shorebirds, and other forms of wildlife that would be killed if they succeeded in reaching the solution ponds. We are pleased to see that the EIS/EIR stipulates that the solution ponds are to be fenced and covered with mesh or netting to keep wildlife away. We do not know whether birds at least occasionally become caught in such netting or mesh but we suggest that a fine mesh be utilized (perhaps with 1-inch openings, rather than 4-inch), if in fact this seems appropriate from the wildlife protection viewpoint. We also urge that the structures supporting the mesh over the ponds be sturdy enough to withstand the strong winds that sometimes sweep across the Mojave Desert.

Response 02

1. Comments noted. The Draft EIS/EIR (page 6.5-3) specifies that the netting mesh size be 1-inch or less. Proper engineering of structures would be employed to withstand strong winds. The Applicant has agreed to install solution storage tanks, as discussed in the Supplement as an additional protective measure.

Comment 03

1. The need for an assured contingency plan for ground water withdrawals, should there be evidence that Piute Spring is being impaired. We urge that such a clearly stipulated, assured contingency plan be provided in the Final EIS/EIR. Even though the hydrological studies for this project have concluded that (page 5.3-6) "based on these analyses, it is concluded that the proposed pumping from the West Well Field would have no noticeable adverse effect (*sic*) on Piute Spring," the document should include a backup water option, in the event that the hydrological prediction proves otherwise.

Response 03

1. Comment noted. See Section 4.1.5 (Water Resources) of this Final EIS/EIR regarding the requested hydrologic contingency plan.

Comment 04

1. We also suggest that the document include some meaningful comparisons with other kinds of human uses of water--so the reader can more easily visualize the maximum figure for the Castle Mountain Project. For instance, how does this quantity of water compare with 'x' number of homes or a field of cotton over the same period of time? The proposed quantity might also helpfully be compared with other mining operations, as, for example, Santa Fe Pacific Minerals Corporation's Lee Ranch coal mine near Grants, New Mexico, which we understand uses roughly ten times the amount of water anticipated by the Castle Mountain Project. Comparisons like the above could help give the reader a better understanding, in human terms, of just what the statistics mean.

Response 04

1. The Proposed Castle Mountain Project would use approximately 725-acre feet per year for about 10 years. As a comparison, the amount of water used for various activities in the region is provided in the following data:

<u>USER, LOCATION</u>	<u>PERMITTED RIGHT (AFY)</u>	<u>EXISTING USE (AFY)<sup>(1)</sup></u>	<u>PROJECTED ADDITIONAL USE (AFY)</u>	<u>ESTIMATED PROJECT LIFE (YEARS)</u>
Biogen, CA (Power Plant)	NA	224.0	—	Indefinite
Colosseum Mine, CA	NA	736.6	—	8
Molycorp Mine, CA	NA	920.7	—	40
Whiskey Pete's/Kactus Kate's, CA	NA	0	1,447.9 <sup>(2)</sup>	Indefinite
Whiskey Pete's/Kactus Kate's, NV	332.1	145.2	2,895.9 <sup>(2)</sup>	Indefinite
Clark County Parks and Recreation, NV	2,172.5	32.3	—	Indefinite

## National Parks and Conservation Association

EXPLANATION:

- (1) Existing use estimated in July 1988. Permit amounts are used where estimated use is not available, unless as otherwise noted.
- (2) Whisky Pete's applications with the State of Nevada are for 1,447.9 AFY in California and 2,895.9 AFY in Nevada. However, proposed actual pumpage would ultimately only total 2,828 AFY from California and Nevada combined. Total consumptive use would be 1,803 AFY (1,658 additional + 145 existing).

Comment 05

1. Access roads to the mine and the related need to protect the desert tortoise from increased risk of road mortalities. Both the Searchlight and Ivanpah routes pass through areas of tortoise population densities. The Ivanpah Road, for eleven miles, passes right through the center of the densest part of such a population in Ivanpah Valley; while the Searchlight Road, for four miles, passes through the edge of another population area in Piute Valley, Nevada. If both routes are utilized for mining access, as the Draft EIS/EIR favors, we urge that both roads be outfitted with fencing that the tortoises cannot get through and with culverts, through which the animals can freely pass from one side of the road to the other. Perhaps a pilot tortoise-protection project should be tested first, as with a couple of miles along the Ivanpah Road in the heart of the densest population, to be certain these mitigation measures actually work as expected.

Response 05

1. Comment noted. The Draft EIS/EIR provided such mitigation for the desert tortoise in Mitigation Measure No. 3 (pages 6.5-3 and 6.5-4). However, based upon public and agency comment, the proposed access has been relocated outside Category 1 habitat, and fencing is no longer recommended (see Supplement, Section 3.2.1, Mitigated Searchlight Access Route).

Comment 06

1. We do favor the use of the Searchlight Road for the bulk of mine-related traffic (commuting, etc.), even though this route would initially require more upgrading than the Ivanpah Road would. Not only is this the most direct route from Nevada, where many of the company's employees would be expected to live, but it would reduce the potential for conflict on the Ivanpah Road between mining traffic and other traffic including visitors to that part of the EMNSA. The Searchlight Road, by contrast, would be, or should be, exclusively for mine-related traffic and not encouraged for public use.



Response 06

1. The existing access route between the project site and Searchlight, Nevada (County Road A68p) is currently used by the public. As discussed in the Supplement, this road will be abandoned after the Mitigated Access Route is upgraded to accommodate the increased volume of traffic. While use of the upgraded route by the public would not be encouraged by BLM, it is not consistent with current policy to restrict such use.

Comment 07

1. At the end of the life of the mining operation, the Searchlight Road should be returned essentially to its pre-mining condition, or even completely restored to a natural condition. We have seen such mining access roads on the BLM's Arizona Strip District upgraded at the startup of mineral development and then successfully downgraded or completely restored to a natural condition after the conclusion of mining. So there's no question that this rehabilitation work can be done and done well. We urge, therefore, that provisions for post-mining access road rehabilitation or downgrading be clearly stipulated in the Final EIS/EIR.

Response 07

1. The Draft EIS/EIR (Table 3.2.4, Proposed Access Improvements) indicated that the Applicant would be required to reclaim the Searchlight Access Route at termination of operations to the satisfaction of BLM. The same requirement was repeated in the Supplement (Table 3.1, Proposed Access Improvements). However, final determination of access closure will be subject to the discretion of BLM.

Comment 08

1. Post-mining reclamation/landscape restoration. Ultimate reclamation or landscape restoration is a major and environmentally significant element of the proposed project. We are pleased to learn that Viceroy will not only rehabilitate surface disturbances of its own making, but is willing to restore some adjacent historic mining surface disturbances, as well. This is outstanding, and is similar to what we've seen in the high-desert of the Arizona Strip.

Response 08

1. Comment noted.

Comment 09

1. Assurance is needed that there will be adequate BLM oversight monitoring, to ensure that environmental stipulations are being fully implemented as anticipated by the EIS/EIR. Such monitoring is essential to a determination of whether and just how thoroughly these stipulations are in fact being carried out. We urge that such a meaningful monitoring plan be clearly indicated in the Final EIS/EIR. In this regard, we also suggest that a new BLM staff position for the Needles Resource Area be created, to be filled with a full-time, fully qualified person who would be responsible for monitoring mining activities throughout the resource area, including the East Mojave National Scenic Area.

Response 09

1. Comment noted. A Draft Mitigation Compliance Program was included in the Supplement (Appendix E). See also Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

## LETTER 7: SIERRA CLUB, CALIFORNIA/NEVADA MINING COMMITTEE

Comment 01

1. This project, as it is now proposed, is unacceptable. It makes the idea that designation of a National Scenic Area or Class L lands protects resources a joke. It unnecessarily endangers Piute Spring, one of Natures Treasures according to the March 1989 BLM Newsbeat. It makes a mockery of the BLM's own motto "Take pride in your California Desert Conservation Area...A National Treasure" by turning our desert over to a foreign mining company for destruction.

Response 01

1. Mining operations are permitted on Class L lands and in the EMNSA in accordance with Federal regulations and the adopted EMNSA Management Plan (BLM, 1988a). See Section 4.1.7.1 (East Mojave National Scenic Area Plan Compatibility) of this Final EIS/EIR for further discussion on this subject.
2. The analyses completed for the Draft EIS/EIR (Sections 4.3 and 5.3, Water Resources) determined that the proposed ground water withdrawals would not endanger Piute Spring.

Comment 02

1. If this mine, located in this very scenic and sensitive area, is to proceed, the only way to prevent unnecessary and undue degradation is to get the water for mining outside the Scenic Area, transport the ore for processing outside the Scenic Area, and after the ore is processed bring it back into the pits and fill them up. Nothing short of this will adequately protect the resources in this area.

Response 02

1. Based upon the conclusions in the Draft EIS/EIR, there are no significant environmental advantages to be gained through obtaining water from other sources, ore processing offsite, and/or backfilling. Additional impacts, however, would likely be realized, such as additional traffic, air emissions, etc. These alternatives to project operations are discussed in the Draft EIS/EIR (Section 3.3, Alternatives Eliminated from Detailed Consideration).
2. See Section 4.1.4.1 (Mine Pit Backfilling) of this Final EIS/EIR for a discussion of backfilling issues.



Comment 03

1. Even if this is done, there need to be more stringent reclamation requirements. For example, revegetation should be required, not just attempted. All plants should be salvaged, and replanted when mining is ended. If necessary to ensure survival, drip irrigation should be installed on a temporary basis. If revegetation cannot be done, the project should not be permitted. Zero migratory bird deaths are the only acceptable standard under the Migratory Bird Treaty Act, and unless the heap leach piles, as well as ponds, are covered, and the standard of zero deaths can be met, the project should not proceed. Better measures to exclude desert tortoise from roads should be implemented, including more patrols and fencing. A full time BLM ranger (so he will not be subject to intimidation and harassment), paid for by the proponent (so taxpayers money will not be spent), should be hired to check and ensure compliance with all conditions of the permit and applicable laws, with full authority to shut down the operation for non-compliance. It should be clear that bonding for the entire cost of reclamation will be required. What happens if the price of gold falls, or if for other reasons the project is abandoned in midstream? In short, more regard for the land and animals, and more regard for the resources other than the minerals is required.

Response 03

1. Standards for revegetation will be adopted as part of the required revegetation program prepared in compliance with 43 CFR 3809, SMARA (Cal. Pub. Res. Code § 2170 *et seq.*), and this Final EIS/EIR. Since not all plants are amenable to transplantation, it is only logical to salvage those that would survive if transplanted.
2. The Applicant will be required to comply with all pertinent Federal, State, and local laws, including the MBTA (16 U.S.C. § 703 *et seq.*). The solution storage tanks, solution circulation system, and other requirements of the Draft EIS/EIR should enable the operation to comply with the MBTA.
3. Fencing as required and discussed in the Draft EIS/EIR (Section 5.5, Wildlife) has been determined to be the best measure to exclude tortoises from roads in high density habitat, based on BLM's *Recommendations for Management of the Desert Tortoise in the California Desert* (July, 1988). Since the project access has been relocated outside Category 1 habitat, fencing is no longer being recommended (see Supplement, Section 3.2.1, Mitigated Searchlight Access Route).

4. Mitigation compliance monitoring is required for this project by both the BLM and County. If the project for some reason was prematurely discontinued, reclamation would be assured through the bond. The Applicant will be required to provide compliance documentation for review by these and other agencies. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for further discussion on bonding and mitigation compliance.

#### Comment 04

1. This proposal is a test, one which the BLM so far has failed, first by trying to slide this proposal through without full environmental analysis, and then by not requiring sufficient reclamation and mitigation be included in the project as proposed. It interprets too narrowly its mandate to protect resources, by giving undue emphasis to the costs of reclamation. The reclamation and mitigation required depend on where the mine is, and the value of the other resources, scenic, plants, wildlife, not the cost - what has to be done to protect all the other resources, has to be done, regardless of the cost. Reclamation and mitigation costs are the same as the Mine Department and Mill Department costs - these costs may also be too high, and may make an ore deposit uneconomic.
2. Approval of this project, in this location, means there is none of the desert that is safe from this type of destruction. It emphasizes the necessity to reform the 1872 mining law, and to secure passage of the California Desert Protection Act.

#### Response 04

1. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for a discussion of the estimated reclamation costs and associated bonding.
2. See Section 4.1.7.2 (Proposed Mojave National Park) of this Final EIS/EIR for a discussion of proposed legislation.



## LETTER 8: SIERRA CLUB LEGAL DEFENSE FUND

Comment 01

1. *The DEIS/EIR inadequately describes the existing environment.* The National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 *et seq.*, and the Council on Environmental Quality regulations, 40 CFR §§ 1500 *et seq.*, require that environmental impact statements accurately describe the existing environment. 40 CFR § 1502.5 mandates that "[t]he environmental impact statement shall succinctly describe the environment of the areas to be affected or created by the alternatives under consideration." 40 CFR § 1502.24 states that "[a]gencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements." Draft environmental impact statements are subject to the same requirements 40 CFR § 1502.9.

Response 01

1. CEQ regulations state that an EIS "shall be analytic rather than encyclopedic," 40 CFR § 1502.2(a); that an EIS "shall be kept concise and shall be no longer than absolutely necessary to comply with NEPA and with these regulations" 40 CFR § 1502.2(c). With regard to the description of the environment in the proposed project area, CEQ regulations provide that "[t]he descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. *Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement*" 40 CFR § 1502.15 (emphasis added). Similarly, the CEQA Guidelines provide that the description of the environment shall only be as long as is necessary to provide an understanding of the significant effects of the project and its alternatives (14 CCR § 15125).

Comment 02

1. *Geology and hydrology is inaccurately described.* The DEIS/EIR is grossly inadequate in its description of the existing geology of the area. It is incorrect in its assumption that the Tertiary Volcanic rocks of the Piute Range extend beneath the Castle Peaks. The "Bedrock Exposure" is improperly shown as overlying the Quaternary alluvium in the Lanfair Valley hydrogeologic cross section. The descriptions of the Tertiary volcanic sections and the Quaternary alluvial units are grossly over-simplified. *See* maps attached at the back of Dr. Wilshire's comments. Furthermore, the DEIS/EIR incorrectly assumes that there is a



"buried ridge of bedrock" between the Castle Mountains and Bobcat Hills, and thus incorrectly hypothesizes that such a ridge might form a ground water barrier between Piute Spring and the West Well Field. Moreover, Piute Spring does not occur at the surface intersection, in Piute Gorge, with the Piute Valley water table. Instead, the spring is fed by the Lanfair Valley ground water system.

2. The description of the area's hydrogeology is similarly faulty. The entire hydrogeologic model on which the DEIS/EIR is based assumes an unconfined aquifer. There is no evidence to support such an assumption. In fact, the hydrogeologic cross section itself shows confining conditions for the eastern 7.5 miles of the valley, and it is possible that those confining conditions continue all the way to the eastern border of the well field. Moreover, the rise in water table experienced immediately after drilling is indicative of the confining of the aquifer in that area. If the aquifer is indeed confined or partly confined, then many of the other assumptions which the DEIS/EIR makes will also be invalid. For example, recharge would not occur whenever there is infiltration.
3. Additionally, Tertiary alluvial units of large lateral extent could provide a major portion of the discharge at Piute Spring. Such a scenario could indicate serious impacts on Piute Spring from pumping from the proposed well field, and make the DEIS/EIR's assumption of negligible impacts incorrect.

#### Response 02

1. The geology described in the Draft EIS/EIR (Figure 4.3.5, Lanfair Valley Hydrogeological Cross Section) is schematic and generalized, based on sound scientific principles. The subsurface geology must be inferred from the drilling data available. The Tertiary andesites encountered at depth near the Castle Mountains are not the same Tertiary andesites as those of the Castle Peaks, or of the Piute Range. Moreover, the issue is not germane to a discussion of the hydrology of Lanfair Valley.
2. A discussion of the issue of a buried ridge of bedrock is presented in paragraph 2 on page 4.3-8 of the Draft EIS/EIR, where it is explained that if the high rock condition is continuous for most of the distance, it would function as a physical barrier between the West Well Field and Piute Spring. The modeling quite properly assumed, as a conservative, "worst

case" analysis, that there *was* hydraulic continuity across the possible bedrock high, as this would maximize potential impacts at Piute Spring. The issue is discussed on Figure 4.3.5 (Lanfair Valley Hydrogeologic Cross Section) of the Draft EIS/EIR.

3. It is agreed that the spring is fed from the Lanfair Valley ground water system. No statement to the contrary was made in the Draft EIS/EIR. This matter is discussed on Draft EIS/EIR pages 4.3-24 and 4.3-25, respecting flows at Piute Spring:
  - "The basic reason that the perennial flow condition exists is because the canyon has eroded to that depth which results in the surface exposure of the ground water surface (gradient), which naturally exists between the Lanfair and Piute Valleys along the entire length of the Piute Range . . .  
The primary origin of the flow is from the upgradient Lanfair Valley . . ."
4. See Response No. 34 (below) for a discussion of the confined/unconfined aquifer issue.

#### Comment 03

1. *The data from test pumping is not helpful.* The testing performed and the data collected for the wells are not revealed with enough detail to be able to assess the validity of assumptions and methodology. The single most important well (PS-1) was allowed to cave in, and thus provides no data. However, caving in could be caused by pressure release from a confined aquifer, and thus might provide useful information in and of itself.
2. The other well in the critical area (PS-2) was not drilled deeply enough to provide a complete picture of potential deeper confined aquifers. Moreover, the DEIS/EIR variously places the water level in PS-2 at 3050 and 2977 feet elevations. If the higher elevation is used, the flow from Lanfair Valley could lead directly toward Piute Spring, and thus the proposed pumping would have a significantly greater impact on the Spring than predicted.

#### Response 03

1. See detailed responses to the Commenter's hydrologic concerns in Letter 8.1: Robert R. Curry (below) of this Final EIS/EIR.

#### Comment 04

1. The quoted hydraulic conductivities and porosities are inappropriate for many of the rock types of the area, and are applied uncritically to the entire Tertiary section, regardless of the

degree of fracturing. All of the computations based upon transmissibilities of ground water in Quaternary and Tertiary rocks are faulty and cannot be used to predict the effects of ground water pumping from the West Well Field in Piute Spring.

#### Response 04

1. See detailed responses to the Commenter's hydrologic concerns in Letter 8.1: Robert R. Curry (below) of this Final EIS/EIR.

#### Comment 05

1. *No meteorological data was collected during the period of preparing the DEIS/EIR.* The precipitation data base used includes data from higher elevation areas with different characteristics (shape, aspect towards storm tracks, and width of high elevation areas) than the Lanfair Valley/New York Mountains area. Precipitation in the former areas probably exceeds that which is likely in the vicinity of the project. Annual precipitation for elevations above 6000 feet is estimated at 11 inches, whereas 8 to 10 inches would be a more realistic figure. Moreover, using the Maxey data base to estimate infiltration, the DEIS/EIR uses a figure of three percent infiltration for 8 inches of precipitation and above. One percent infiltration for 8 to 9 inches of precipitation, two percent for 9 to 11 inches, and three percent for 11 to 13 inches are more reasonable figures.
2. The DEIS/EIR fails to take into account the fact that in higher elevation bedrock areas, the moisture from short periods of precipitation tends to evaporate from the rock surfaces directly, and thus not to contribute to recharge. While the DEIS/EIR estimates that in the "worst case," recharge occurs at the rate of 2,000 acre-feet per year, a better estimate would be 800 to 1,000 acre-feet per year over the area of effective recharge.
3. Furthermore, the DEIS/EIR assumes that there is excess recharge above the 200 to 300 acre-feet per year of discharge from Lanfair Valley to Piute Valley in the vicinity of Piute Spring, and that the excess flows into adjacent basins. However, there is no evidence for this. In fact, the hypothesized underflow in directions different from surface drainage contradicts the evidence of subsurface flow being directly parallel to surface topography. Moreover,



approximately 570 acre-feet of recharge is directed toward the northeast subbasin that feeds Piute Spring, which is much less than would be necessary to support the "excess recharge" hypothesis of the DEIS/EIR.

#### Response 05

1. See detailed responses to the Commenter's hydrologic concerns in Letter 8.1: Robert R. Curry (below) of this Final EIS/EIR.

#### Comment 06

1. *Biota is not adequately inventoried.* It is not clear how methodically the species and related resources in the area of the site were inventoried. For example, if the discovery of the creosote bush clonal rings were merely random finds by Gould, then a systematic survey for clonal rings would have to be conducted. Furthermore, a systematic survey of ancient wood rat middens should be carried out. Moreover, the least Bell's vireo is not mentioned as a species that could frequent the vicinity. If a thorough investigation was not conducted to determine the presence or absence of the vireo, then one should be conducted.

#### Response 06

1. The Draft EIS/EIR (Sections 4.4, Vegetation and 4.5, Wildlife) explains that vegetation and wildlife inventories were completed based on review of accumulated data from the area on plant communities and assemblages, and from the study of aerial photographs and supplementary onsite field inventories. During the course of the Draft EIS/EIR preparation, seven independent vegetation and wildlife experts were involved in the systematic onsite studies (see Draft EIS/EIR Section 11.0, Consultant Qualifications).
2. The creosote bush clonal rings location identified in the Draft EIS/EIR is the only location found onsite during these inventories. While creosote bush clonal rings are of some scientific interest, they are not uncommon in the Mojave Desert and are afforded no special status. However, project facilities were located so as not to disturb the onsite clonal rings.
3. No ancient woodrat middens are known to occur onsite. However, such middens do occur throughout the southwest and can be of scientific interest in assessing paleoclimates and paleoflora. The Draft EIS/EIR (page 6.2-1) therefore recommended that an individual qualified in the assessment of such middens inventory the project site.

4. Least Bell's vireo is not mentioned in the Draft EIS/EIR as a species that could frequent the vicinity because it has not been observed in Lanfair Valley and is not expected to occur there. Least Bell's vireo is associated with dense thickets in riparian habitats. It is expected that the location nearest Lanfair Valley with appropriate least Bell's vireo habitat is about 20 miles east of the project site along some portions of the Colorado River.

#### Comment 07

1. Under the Federal Endangered Species Act (FESA), 16 U.S.C. §§ 1531 *et seq.*, the action agency (here, the Bureau of Land Management [BLM]) has the duty to inquire of the Fish & Wildlife Service (F&WS) whether any endangered species "may be present" in the area of the Proposed Action. 16 U.S.C. § 1536(c) (1). The area of the Proposed Action, or "action area" is defined as meaning "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." 50 CFR § 402.02. Any effects which are "reasonably certain to occur," and those which "are interrelated or interdependent with" the project in issue must be taken into account when defining the action area for the F&WS inquiry. 51 Fed. Reg. 19,930; 50 CFR § 402.02.
2. Therefore, the BLM has the duty to inquire of F&WS whether there are any endangered or threatened species within not only the actual site, but at Piute Spring, which would be affected by pumping with reasonable certainty, in Wilderness Study Area 267, parts of which will likely be subjected to loud noises and nighttime light from the Oro Belle pit, and in Wilderness Study Area 266, which appears to be near some of the wells in the West Well Field (e.g., W-7). If such an inquiry leads to the conclusion that there may be endangered species present within the area of the Proposed Action, then BLM would be required to prepare a biological assessment to determine whether such species are "likely to be affected" by the proposed project. 16 U.S.C. § 1536 (c) (1).

#### Response 07

1. FWS has been consulted throughout the course of the environmental process:
  - The BLM and County consulted with the FWS pursuant to Section 7 (c) of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*), through the Notice of Intent and Notice of Preparation. The FWS indicated that there are no listed or proposed endangered and/or threatened species in the vicinity of the proposed project. FWS letters to the BLM and County were included in the Draft EIS/EIR (Appendix E, Public Scoping Notifications).



- FWS was sent a copy of the Draft EIS/EIR in March, 1989. Their comments are included in Section 4.2.1.1 (Letter 4: U.S. Department of the Interior, Fish and Wildlife Service) of this Final EIS/EIR.
- FWS was sent a copy of the Supplement in January, 1990. No comments were received.
- Subsequent to the Federal listing of the desert tortoise, BLM submitted a Biological Assessment and entered into formal consultation with FWS on the Castle Mountain Project in accordance with Section 7 of the Endangered Species Act. The Biological Opinion issued by FWS is included in Appendix G of this Final EIS/EIR.

#### Comment 08

1. *The consideration of impacts from the proposed project is grossly inadequate.* Despite the length of the DEIS/EIR's discussion on environmental impacts from the proposed project, its conclusion that there will be no significant impacts at all after mitigation is grossly inaccurate.
2. Impacts to wilderness study areas are not sufficiently addressed. The Federal Land Policy and Management Act of 1976 (FLPMA) requires that:
  - "During the period of review of (Wilderness Study Areas) and until Congress has determined otherwise, the Secretary (of Interior) shall continue to manage such lands according to his authority under this Act and other applicable law in a manner *so as not to impair the suitability of such areas for preservation as wilderness*, subject, however, to the continuation of existing mining and grazing uses and mineral leasing in the manner and degree in which the same was being conducted on October 21, 1976: *Provided, that, in managing the public lands the Secretary shall by regulation or otherwise take any action required to prevent unnecessary or undue degradation of the lands and their resources or to afford environmental protection*" FLPMA § 603(c) (43 U.S.C. § 1782(c)) (emphasis added in part).

Since the Castle Mountain operation has not yet commenced, and since the exploration program was not even begun by the Applicant until 1983, it is clear that the Castle Mountain project would not be "grandfathered in" under the existing use provisions.

3. Many of the hydrogeological assumptions made in the DEIS/EIR go against the weight of the scientific evidence. If the assumptions are incorrect, the project could have grave impacts on the Piute Spring Wilderness Study Area and the Area of Critical Environmental Concern. The cone of depression would not be limited to the vicinity of the well field if the aquifer were confined or partially confined. Furthermore, any change in pressure caused by pumping could reduce the flow at Piute Spring within a matter of seconds. If a significant portion of water originates in Tertiary alluvial units, or if the flow from Lanfair Valley leads directly



towards Piute Spring, then the pumping could drastically alter the discharge at the Spring. Of course, any decrease in flow at Piute Spring would impact the biota dependent on it. This would certainly constitute an impairment of the wilderness value and an unnecessary or undue degradation of the land and its resources in violation of FLPMA § 603(c).

#### Response 08

1. See detailed responses to the Commenter's hydrologic concerns in Letter 8.1: Robert R. Curry (below) of this Final EIS/EIR.
2. For a discussion of unnecessary or undue degradation, see Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR. The nonimpairment standard referenced by the Commenter only applies to projects sited within WSAs, unlike the proposed project.
3. For a discussion of the hydrology monitoring and contingency plans, see Section 4.1.5 (Water Resources) of this Final EIS/EIR.

#### Comment 09

1. Wilderness Study Area 267 would likely suffer impairment and unnecessary or undue degradation in the form of exposure to loud noise and night lighting from the Oro Belle Pit, which is very close to the boundary of the study area. Wilderness Study Area 266 could similarly suffer from the noise associated with the operation of the wells in the West Well Field.

#### Response 09

1. The potential effects of the Castle Mountain Project on WSA 266 and WSA 267 are discussed in the Draft EIS/EIR (Section 5.10, Land Use). The potential impacts of the project were evaluated considering the BLM's *Interim Management Policy and Guidelines for Lands Under Wilderness Review* (November 10, 1987).
2. The offsite environmental impacts of lighting and noise would be temporary impacts associated with the operational period. While the Oro Belle Pit is physically located near WSA 267, the intervening topography is expected to reduce or impede project noise and lighting so that no significant effect would occur. While the West Well Field is located near the boundary of WSA 266, noise from water pumps would be negligible, since the power would be

generated at the project site, located over two miles from WSA 266. The Proposed Action would not, therefore, cause unnecessary or undue degradation of the wilderness values of WSA 266 or WSA 267.

3. In summary, consideration of impacts from activities outside wilderness areas on wilderness values, and application of appropriate mitigation measures, is best addressed by BLM Manual 8560, Management of Designated Wilderness Areas:
  - "No buffer zones are created around wilderness areas to protect them from the influence of activities on adjacent land. The fact that nonwilderness activities or uses can be seen or heard from areas within the wilderness does not, of itself, preclude such activities or uses up to the boundary of the wilderness area. When activities on adjacent lands are proposed, the specific impacts of those activities upon the wilderness resource and upon public use of the wilderness area must be addressed in environmental assessments or environmental impact statements, as appropriate. *Mitigation of impacts from outside wilderness must not be so restrictive as to preclude or seriously impede such activities*" (emphasis added) (8560.19).

#### Comment 10

1. *Impacts to wildlife are improperly dismissed.* Any exposed cyanide solution attracts migrating birds, and could thus violate the Migratory Bird Treaty Act of 1918 (MBTA), 16 U.S.C. §§ 703 *et seq.* The MBTA makes it unlawful by any means or in any manner to kill any migratory bird. 16 U.S.C. § 703. The unauthorized killing of even a single bird may be a criminal offense, whether or not it was intentional. 16 U.S.C. § 707; *see United States v. Corbin Farm Service*, 444 F. Supp. 510, 532-36 (E.D. Cal. 1978), *affd.* 578 F. 2d 259 (9th Cir. 1978).

#### Response 10

1. The Applicant and operator will be required to comply with pertinent Federal and State laws, including the MBTA (16 U.S.C. § 703 *et seq.*).
2. The Draft EIS/EIR describes measures that are designed to isolate cyanide processing solutions from wildlife and would be incorporated into the project. These measures would include fencing, netting, drip irrigation, and solution piping as stated in the Draft EIS/EIR (pages 6.5-2 and 6.5-3). The use of solution storage tanks, as described in the Supplement (Section 3.2.2, Solution Storage) and in Section 3.1 (Final Project Design) of this Final

EIS/EIR will also serve to isolate solutions from wildlife. It is expected that these physical isolation measures would be adequate to enable the project operations to satisfy requirements of the MBTA.

Comment 11

1. *There may be severe effects to other types of wildlife as well.* Sprinklers along the sides of the pad may lead to wildlife exposure to cyanide leaching solution. If there is any distance between the edge of the pad and the connecting pipes, there would be a large area of exposure to wildlife.
2. Burrowing animals, and snakes and other creatures which use the burrows, could get under the fence which is around the solution ponds. Birds and bats might be tangled up in the netting covering the solution ponds, and creatures may be able to get through the chain link mesh if the netting is not securely fastened.

Response 11

1. The Draft EIS/EIR (Section 5.5, Wildlife) described a cyanide solution system that would be designed such that no significant solution would be exposed to wildlife. Physical isolation measures included limiting exposed solution on the heap leach piles, connecting pipes, and all other points of collection, conveyance, distribution, and storage. The use of netting designed to prevent entry by birds and bats is not a new concept. The netting has been used for other facilities (such as fish hatcheries) with little, if any, problem of entanglement. Proper installation and maintenance of the fencing (for burrowing animals, etc.) will be ensured through the Mitigation Compliance Program.
2. Although sprinklers on the sides of the heaps were not expected to pose a significant hazard to wildlife (especially in light of the limited area that would be sprinkled at one time), this procedure for solution distribution has been eliminated from the Proposed Action and replaced with drip irrigation, as stated in the Supplement (page 3-28).

Comment 12

1. The impacts of the proposed project on the desert tortoise (*Gopherus agassizii*), a Category 1 Candidate species under FESA, could be serious. As a Category 1 species, the tortoise is entitled to protection by the Secretary of Interior pursuant to 16 U.S.C. § 1533(b)(3)(c)(ii).



Response 12

1. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussion of the current status of the desert tortoise. The Federal and State listing status of the tortoise has been recognized throughout the course of this EIS/EIR preparation and a discussion of the desert tortoise was included in the Draft EIS/EIR, Supplement, and this Final EIS/EIR.
2. The Draft EIS/EIR (Section 5.5, Wildlife) identified potential impacts to the desert tortoise. Mitigation measures to reduce project impacts below a level of significance were described in Section 6.5 (Wildlife). The analysis concluded that, as a result of implementing the proposed mitigation measures, no significant impacts to the desert tortoise would be expected. Based upon the absence of tortoise in the project area and the conclusions reached by FWS in their Biological Opinion (Appendix G), it is determined that the Proposed Action would not likely jeopardize the continued existence of the desert tortoise.

Comment 13

1. Increased run-off along the edges of roadways could lead to an enhancement of vegetation, which would in turn lead to a concentration of wildlife directly adjacent to the roadways. This would increase the negative impacts on wildlife.

Response 13

1. Since improvements to roadways described in the Draft EIS/EIR (Table 3.2.4, Proposed Access Improvements) would not include paving, no significant increase in run-off is expected. No such enhancement of vegetation is obvious adjacent to the many existing dirt roads in the area.

Comment 14

1. *Other impacts are ignored.* The excavation of the pits will disrupt at least lower order drainages. And the pits themselves will have centripetal drainage, which will diminish run-off to downstream tributaries. Neither of these impacts are mentioned in the DEIS/EIR. The mine waste dumps will disturb at least lower order drainages and increase stream gradients, thus accelerating upstream headcutting.

Response 14

1. The Draft EIS/EIR does not ignore potential impacts, but instead focuses on the significant impacts of the project in accordance with NEPA and CEQA. The project site is located in a

semi-arid landscape where vegetation and wildlife is not substantially different in the ephemeral washes versus adjacent elevated areas. The relevance of an extended analysis for run-off and drainages is therefore questionable.

2. As discussed in the Draft EIS/EIR (page 5.3-1), "... the facilities are arranged to minimize disruption to ephemeral surface water drainages." In the vicinity of the mine pits, run-off from the small drainage area would enter the pits and the same ground water recharge area. The reduction in downstream flow that could occur as a result of precipitation falling into the mine pits is estimated at no more than three percent of this drainage, which would not significantly affect either the drainage tributaries or associated vegetation.
3. The overburden pile would be configured such that the run-off would be directed into several infiltration basins on the top of the pile. Water would percolate through the pile and exit along the toe of the pile, to ultimately enter the natural stream course. Slope design and protection would be engineered to prevent acceleration of upstream headcutting and other erosion, in accordance with standard engineering practice.

#### Comment 15

1. The heap leach piles will have physical characteristics which subject them to accelerated wind and water erosion, slump, and subsidence, as compared with waste dumps. The DEIS/EIR fails to take this into account. Moreover, the placement of the heap leach piles adjacent to main drainages will probably lead to sidewall erosion during flood stages. The pits themselves will pose safety hazards, and will be permanently unproductive ecologically.

#### Response 15

1. As with other project facilities, proper engineering practices would be employed to prevent acceleration of erosion. The physical characteristics of the heap leach piles pose no new engineering problems for erosion protection that have not been successfully addressed at similar sites. Erosion of heap leach piles is commonly controlled by construction of a perimeter berm. Engineering design of these facilities at the Castle Mountain Project would conform to site-specific requirements to prevent acceleration of erosion and provide for public safety. The design will account for the potential for a 100-year storm, to avoid significant erosion due to flooding. Reclamation procedures would employ public safety measures for the mine pits, as well as for other facilities, as discussed in the Draft EIS/EIR (page 3.2-51).



2. The Commenter's characterization that the mine pits are "permanently unproductive ecologically" is inaccurate. Habitat would be altered, but would be used by other types of animals. Small nesting birds, for instance, would use the vugs in the pit walls ("vugs" are small natural voids or cavities in the rock that are exposed when the rock is mined). The rocky walls and ledges would present similar topographic conditions to adjacent steep hillsides for the bighorn sheep. In terms of small mammals such as rabbits and rodents, the 135 acres to be occupied by the mine pits would represent less than one-tenth of one percent of wildlife habitat in Lanfair Valley. As this would not substantially diminish the habitat for a wildlife species, it is not considered a significant impact in the Draft EIS/EIR (page 5.5-1). Further, the Castle Mountain Project Reclamation Plan incorporates rehabilitation of previously disturbed sites, comprising about 110 acres (the North and South Clay pits), which will be recontoured and revegetated to offset the habitat loss in the area of the project mine pits.

#### Comment 16

1. *The pits, spoils and heap leach piles will be visual impairments.* The grading methods utilized will not yield landforms resembling the local natural landforms. Moreover, staining the upper walls of the pits may actually pollute the environment with the compounds in, and the breakdown products from, the staining materials.

#### Response 16

1. A visual impact analysis was completed in the Draft EIS/EIR in accordance with BLM Visual Resource Management guidelines. Project visual renderings (pages 5.8-5, 5.8-6, and 5.8-7) demonstrated that the flat form of the overburden and heap leach piles would be compatible with the flat lines of the floor of Lanfair Valley. The visual analysis concluded that the project would satisfy EMNSA Plan requirements (see Draft EIS/EIR, page 5.8-16). See Section 4.1.7 (Land Use) of this Final EIS/EIR for additional discussion of project compatibility with the EMNSA.
2. The solution that would be used for staining the upper walls of the mine pits is known as Permeon and has been used at other locations. Agencies that have used the rock stain include:
  - Arizona Department of Transportation
  - BLM (CA, AZ, NV, UT)
  - California Department of Transportation
  - U.S. Forest Service
  - Other agencies and private developers

Permeon is composed primarily of manganese and iron sulfates. These chemicals are not included on the Proposition 65 (Safe Drinking Water and Toxic Enhancement Act of 1986) list



of cancer causing chemicals. The RWQCB has reviewed the chemical constituents and determined that they would not be harmful to water quality, when appropriate application procedures are used. Based on previous RWQCB reviews of the chemical constituents and approval for solution use, no significant potential for contamination of soils and/or ground water is expected.

#### Comment 17

1. Toxic chemicals used in processing, such as cyanide, and soluble heavy metals which result from the process, such as cadmium, lead, and zinc, may pose a long-term threat to ground water resources underlying the site.

#### Response 17

1. As explained in the Draft EIS/EIR, process facilities using reagents for gold recovery would be designed, constructed, and operated in accordance with criteria approved by the RWQCB for protection of ground water. Decommissioning of facilities and neutralization of cyanide solution would also be in compliance with requirements of the RWQCB and/or BLM. See Section 4.1.3 (Water Resources) of this Final EIS/EIR for additional discussion of cyanide use and ground water protection.
2. The potential for contamination by soluble metals was discussed in the Draft EIS/EIR (pages 5.3-1 and 5.3-2). "Samples of ore, protore, and overburden from the Castle Mountain Project site have been subjected to geochemical testing to determine the acid generation potential and extractable metals." The results, shown in the Draft EIS/EIR (Table 5.3.1, Summary of Results, Analysis of Ore, Protore, and Overburden) indicate that ". . . the measured concentration of metals frequently associated with gold ore are relatively low . . ." No short-term or long-term threat to ground water resources is therefore expected.

#### Comment 18

1. *Cumulative impacts are not given serious consideration.* Cumulative impacts are not adequately analyzed by the DEIS/EIR. For example, livestock grazing within the general area is not mentioned as a cumulative impact problem, even though such grazing could destroy much of the native grasses. Moreover, the impacts from other mining operations in the area, as well as from future mining operations in the area, as well as from future mining operations by the Applicant itself, are given only superficial analysis.

Response 18

1. The Draft EIS/EIR (Section 8.0, Cumulative Impacts) included a detailed evaluation consistent with the requirements of NEPA and CEQA. The impact of grazing in the Ivanpah, Lanfair, and Piute Valleys is included in the consideration of the potential effect of cumulative activities on vegetation and wildlife resources as shown in the Draft EIS/EIR (Table 8.2.1, Other Activities in the Area). As discussed in the Draft EIS/EIR (page 8.2-5), no new grazing activities are known to be proposed, so a future increase in the level of impact to native grasses or other vegetation is not expected. Based on the discrete types of activities, the Castle Mountain Project would not contribute significantly to the types of impacts associated with grazing activities.
2. The Draft EIS/EIR evaluated impacts of other existing and reasonably anticipated future mining operations where they could cumulatively affect an environmental resource. Since no other future mining operations by the Applicant are proposed, such consideration in the Draft EIS/EIR is not warranted. The Draft EIS/EIR provides a detailed and realistic analysis of cumulative impacts based upon available data for existing mining operations and mining exploration in the vicinity of the Castle Mountain Project. Reasonable forecasting of impacts that could occur from future mine development was undertaken based upon the degree of mineral exploration in the area and the time commonly needed to complete the exploration, engineering, and environmental work required prior to development.
3. In response to public comment, additional cumulative impact discussion was provided in the Supplement (Chapter 5.0, Cumulative Impacts).

Comment 19

1. *Mitigation and reclamation measures are insufficient.* The revegetation program is totally lacking in substance. The revegetation plan as proposed in the DEIS/EIR makes no reference to the large body of literature on the problems involved with arid land reclamation, including two books by the National Academy of Sciences and hundreds of scientific papers on the subject. The revegetation plan is overly optimistic in its projections of 30 to 60 years for "complete reestablishment of desert vegetation." Natural replacement of a single creosote bush in the Mojave Desert under ideal conditions has been calculated to take more than 50 years, and complete recovery in disturbed areas could take much longer. Moreover, the single reference cited in the estimate of natural recovery rates has little application to the proposed





Castle Mountain project, since the area studied in the cited report had far less disturbance, a more favorable climatic regime, and a very different vegetative community than that of the Castle Mountain site.

#### Response 19

1. See Response No. 01.
2. EISs and EIRs are prepared as analytic, rather than encyclopedic, documents in accordance with CEQA guidelines (14 CCR §§ 15140 through 15151) and the CEQ regulations (40 CFR §§ 1502.7 and 1502.8). Discussion of the large body of literature available on successes and failures of arid land revegetation was considered unnecessary for the analytical evaluations in the Draft EIS/EIR, since it would provide little relevant information for revegetation processes in Lanfair Valley and the Castle Mountain Project site. Since the project site lies at the upper limits of the precipitation regime common to "arid" environments, it is more appropriately termed "semi-arid." Therefore, much of the arid land literature may be inaccurate.
3. The Draft EIS/EIR provides a detailed list of considerations to be employed in revegetation procedures that are designed in accordance with conditions *known to occur in the study area*. Since natural revegetation has been historically successful on the project site and surrounding disturbed areas, the Commenter's concerns that revegetation is not possible for the Castle Mountain Project are not supported by available information. For example, based on onsite revegetation evidence, (see Section 4.1.4.2, Revegetation, of this Final EIS/EIR for photographs of natural revegetation) the Commenter's statement that: "Natural replacement of a single creosote bush in the Mojave Desert under ideal conditions has been calculated to take more than 50 years, and complete recovery in disturbed areas could take much longer," is in error as to the Castle Mountain Project site. The Hart townsite has been abandoned for 70 years; large creosote bushes (evidently in excess of 50 years of age) are distributed throughout the site. Creosote bush are also naturally reestablished on overburden piles created by clay quarrying in about 1960. These and other examples of successful natural revegetation in Lanfair Valley are discussed in Section 4.1.4.2 (Revegetation) of this Final EIS/EIR. It is therefore likely that the Commenter's cited calculation refers to another locale and precipitation regime.



4. The Commenter's quote for "complete reestablishment at desert vegetation," out of the context of the Draft EIS/EIR, do not reflect the actual statements and considerations in the Draft EIS/EIR (Section 5.4, Vegetation):

"It is anticipated that reestablishment of pre-disturbance vegetation cover and species composition would be a lengthy process; studies indicate that between 30 and 60 years is commonly required in this environment by natural processes (USGS, 1988). The natural revegetation that has occurred over the Hart townsite during the last 70 years provides evidence supporting this time frame" ( page 5.4-5).

5. The Draft EIS/EIR recognized that natural recovery (unassisted by active revegetation measures) would require an extended period of time to return to predisturbance vegetation cover and species composition. The Draft EIS/EIR cited a recent USGS paper on this subject, because it reviews about 100 references on vegetation disturbance and natural succession, especially throughout the Mojave Desert. This comprehensive study provides background information on soil and vegetation processes. It specifically addresses recovery on a number of Mojave Desert abandoned townsites, which have plant species similar to those that occur in Lanfair Valley, especially plant assemblages dominated by *Coleogyne ramosissima* (blackbush) and *Larrea tridentata* (creosote bush) that cover the majority of the Castle Mountain Project site. Moreover, some of the townsites cited in the USGS study are located at elevations similar to the Hart site (with comparable expected precipitation), and nearly identical abandonment time frames (i.e., Gold Valley: 4,325 feet elev/abandoned 1907, Greenwater, Furnace, and Kunz: 4420 feet and 4720 feet elev/abandoned 1908). The Greenwater, Furnace, and Kunz townsites cited in the USGS Study are located near the ecotone where the *Larrea* assemblage changes to the *Coleogyne* assemblage; this same ecotone is exhibited at the Hart townsite and Castle Mountain Project site. Historic photographs shown in the USGS study indicated that disturbance at the town sites was intensive; nearly all vegetation was often removed, and soils were compacted through human activities. These same effects occurred at the Hart townsite, which has exhibited good natural recovery of the plant community, unassisted by man's cultural inputs such as scarification, fertilization, and irrigation.
6. The USGS (1988) revegetation information is appropriate, based on the type of disturbance, climatic regime, and dominant vegetation species. The Draft EIS/EIR reference to the USGS study was not intended as an unqualified example of expected vegetation recovery at the Castle Mountain site, but as a frame of reference for natural recovery periods demonstrated at other applicable locations.

7. The body of literature on arid land revegetation indicates that recovery may be highly variable and should be evaluated with respect to each site's disturbance, climate, and plant species. The Draft EIS/EIR therefore approached this issue based on the specific attributes of the Castle Mountain Project site, its location in Lanfair Valley, and existing evidence at previously disturbed local sites. Since it is evident that revegetation by natural means is possible in the 30- to 60-year time frame, it is expected that an accelerated recovery would be possible with assistance of the revegetation program recommended in the Draft EIS/EIR (Section 3.2.8.2, Reclamation Plan).

#### Comment 20

1. The "learn as we go" posture taken by the DEIS/EIR flies in the face of known problems with revegetation in general and arid lands in particular. For example, stockpiling soil destroys soil texture and structure, and kills off the soil biota necessary for productivity. Therefore, it is naive to think that soil can be stockpiled for 10 years and still be useful.

#### Response 20

1. Procedures and methods available for establishing plants are well documented. However, the strategies for employing specific procedures require site-specific knowledge and an appropriate level of effort to achieve the desired results. For this reason, the Draft EIS/EIR (Section 3.2.8.2, Reclamation Plan) recommended that an onsite research program be developed to determine revegetation procedures instead of arbitrarily establishing procedures at this time.
2. The problems cited for stockpiled soils are not universal, particularly in the desert environment. Desert soils in this region (aridisols) typically have thin, poorly developed horizons (structure). Soil texture may be poorly differentiated. Such soils typically lack significant organic materials, which limits soil biota. Because of these factors, the actual benefit of stockpiling desert soils for use in revegetation has not been well established. Evidence of successful natural revegetation on the Castle Mountain Project site, and other locations in Lanfair Valley where topsoils have been stripped by previous activities, may indicate that the need for stockpiling the thin soils is limited. However, the Draft EIS/EIR recommended that soil studies be completed and stockpiling be considered as part of the revegetation program. This study has been completed, and is included in the final reclamation



plan (Viceroy, 1990). During operations, the areas to be disturbed will be minimized until such time as they are actually needed for project activities. Soil or "growth media" will be spread on disturbed areas prepared for revegetation as early as practicable.

3. The Draft EIS/EIR (Section 3.2.8.2, Reclamation Plan) recommended that the program coordinate and phase revegetation with mining and processing operations. Therefore, long-term (i.e., 10 years) stockpiling of soils would not generally be necessary.

#### Comment 21

1. Moreover, there is presently no vegetation expert, let alone a specialist in revegetation of arid lands and native plants, commissioned by the Applicant to oversee the revegetation process.

#### Response 21

1. The Draft EIS/EIR (page 3.2-47) explains that a consulting expert, with qualifications acceptable to BLM, would be selected to implement the revegetation program. Discussions with institutions experienced and/or equipped to satisfy the program requirements, occurred during the preparation of the Draft EIS/EIR. The Applicant has selected the California State Universities Desert Studies Consortium to initiate the program.

#### Comment 22

1. In short, the DEIS/EIR fails to estimate the difficulty and cost of a successful revegetation program, and makes it impossible to establish the appropriate levels of bonding for the reclamation process.

#### Response 22

1. The Draft EIS/EIR explains that a bond would be required for the Castle Mountain Project in an amount "... determined by the BLM and County based upon the final design plans for the acreage to be disturbed and the projected costs of reclamation" (page 3.2-53). Reclamation costs would be appraised at the prevailing cost rates at the time reclamation is to be completed. Cost rates would be based on completion of reclamation activities such as surface contouring, soil redistribution, ground preparation, reseeding, transplanting, watering, and fertilizing. These are common procedures with identifiable costs. Further definition of the specific bonding level is unnecessary for purposes of the environmental impact process; the fact that bonding is required as a mitigation measure satisfies both NEPA and CEQA. However, a table of preliminary reclamation costs that will be used in considerations for bonding has been included in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.





Comment 23

1. *Other mitigation and reclamation measures are inadequate.* The metal portion of the fence around the solution ponds should go at least one foot, and preferably two feet, into the ground in order to block tunnels constructed by burrowing rodents and other creatures. The fencing along the exposed desert side of the heap leach pads should be similar to that used around the solution ponds, with the metal base going well into the ground. A simple barb-wire fence is not adequate to inhibit the movement of many kinds of wildlife.

Response 23

1. See detailed response to the Commenter's fencing concern in Response No. 41 (below).

Comment 24

1. *Sprinklers should not be used even on the sides of the heap leach pads.* Connecting pipes should be installed at the edges of the pads so that the cyanide solution is not exposed before being drained into the recycling system.

Response 24

1. The primary concern with sprinkler irrigation was determined in the Draft EIS/EIR to be the potential for ponding of solution on the top of the heap leach piles. Since this would not occur on the sides of the heaps, sprinkler irrigation should not present a significant source of solution available to wildlife. Sprinklers are commonly used at other heap leach operations with no apparent significant impacts to wildlife. Nevertheless, the Commenter's concern for sprinkler irrigation should be satisfied, as this method of solution disturbance has been eliminated from the project and replaced with drip irrigation (see Supplement, page 3-28).
2. While the detailed engineering of connecting pipes for solution transport has not yet been completed, the planned configuration would be to cover pipes at the edge of the heap leach pads such that no significant solution would be available to wildlife.

Comment 25

1. Netting used to cover the solution ponds must be securely fastened, and the environmental consultant at the site should carefully observe whether birds and bats can pick up the netting in time to avoid getting entangled in it. Flotation devices should be tightly secured by a flexible border that is anchored to the ground or to an attached structure. Pet dogs and cats should not be allowed onto the site.

Response 25

1. The Draft EIS/EIR (page 6.5-3) recommended that a small mesh netting be used to avoid avian and bat entanglement. Netting used would be secured at its borders to prevent animal entry. The onsite environmental specialist/consultant would monitor the netting, as well as the other facilities designed to exclude wildlife. See also Section 3.1 (Final Project Design) of this Final EIS/EIR for a discussion of the solution storage area.
2. The Commenter's concern regarding potential conflicts between domestic animals and local wildlife is acknowledged. A mitigation measure has been added to satisfy this concern and is included in Section 3.2 (Mitigation Measures) of this Final EIS/EIR.

Comment 26

1. Staining materials should be tested for toxic materials and break down products before being introduced into the natural environment.

Response 26

1. See Response No. 16.

Comment 27

1. A monitoring plan should be undertaken in order to assess and minimize the impacts to Piute Spring. And finally, backfilling of the pits should be undertaken, as discussed *infra*.

Response 27

1. Water monitoring wells are a recommended mitigation measure in the Draft EIS/EIR (page 6.3-2). The hydrologic monitoring program is further discussed in Section (Water Resources) of this Final EIS/EIR.
2. See Section 4.1.4.1 (Mine Pit Backfilling) and Section 3.3 (Additional Alternatives) of this Final EIS/EIR for discussions of backfilling.

Comment 28

1. The range of alternatives given in the DEIS/EIR is artificially narrow and leaves out important options. Consideration of alternatives is "the heart of the environmental impact statement."

40 CFR § 1502.14. The DEIS/EIR offends NEPA by considering an improperly narrow range of alternatives and by dismissing the alternative of backfilling the pits after completion of the project.

2. The California Surface Mining and Reclamation Act of 1975 (SMARA) defines "reclamation" as:

"The combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that *mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.*" SMARA, Cal. Pub. Res. Code § 2733 (emphasis added).

Therefore, California law gives authority to require backfilling to minimize the damage to wildlife habitat, flooding, erosion, "and other adverse effects" which are likely to result from the Castle Mountain mining activities.

3. Although the entire contents of the spoils dumps cannot be backfilled into the pits, due to expansion of rock volume, 70 percent of the contents could be replaced. Furthermore, the area occupied by the spoils dumps would be greatly reduced by angle of repose dumping over the smallest possible land surface, which would be possible if backfilling were planned. Disruption of the drainage patterns and diminished run-off to downstream tributaries would be greatly reduced by backfilling. Safety hazards, ecological uselessness, and visual impairment would similarly be reduced. Moreover, possible long-term dangers from pollution of ground water by the spent heap leach piles would be minimized.

#### Response 28

1. No less than 15 alternatives were evaluated during the course of the analysis. The Commenter is referred to Sections 3.3 (Alternatives Eliminated from Detailed Consideration) and 3.4 (Alternatives to the Proposed Action), of the Draft EIS/EIR for a review of the alternatives considered. These included various alternative mining and processing technologies, alternative locations for project facilities, alternative water supply, alternative power supply, and alternative access. While many of these alternatives were determined not feasible or inappropriate for the reasons stated therein, the broad range of reasonable alternatives



considered satisfies both the intent and requirements of NEPA and CEQA. Moreover, the range of alternatives considered is consistent with requirements that alternatives considered be "feasible," "viable," and "practicable."

2. Circulation of the Draft EIS/EIR resulted in additional alternatives being suggested by the reviewing agencies and public. The Supplement (Chapter 4.0, Alternatives to the Proposed Action) included an analysis of five additional alternatives, in the spirit of NEPA and CEQA.
3. Backfilling of overburden and processed ore disposal was evaluated in the Draft EIS/EIR (Section 3.3.2.1, Mine Pits). Based upon the volume of material that could be backfilled (about 50 to 70 percent) and the criteria for determining significance of impact, it was determined that no substantial environmental benefit would be realized from this activity, and additional adverse effects would be created. This determination was made primarily on the basis of impacts to vegetation, wildlife habitat, and visual resources. Further discussion on the issue of backfilling is included in Section 3.3 (Alternative Mitigation Measures Considered) of this Final EIS/EIR.
4. As noted by the Commenter, although SMARA provides authority for backfilling where necessary, backfilling is not required. Other considerations will be factored into the final decision on this issue by the BLM and County, including protection of mineralization in the Castle Mountain Project mine pits, as discussed in Section 4.1.4.1 (Mine Pit Backfilling) of this Final EIS/EIR.
5. The Commenter's concerns for impacts to drainage patterns, run-off, safety, wildlife habitat, visual resources, and ground water are addressed in the Draft EIS/EIR (Chapter 5.0, Environmental Impacts), where it was found that project impacts relating to each of these issues could be mitigated below a level of significance, without the suggested mitigation measure of backfilling.

#### Comment 29

1. Alternatives for processing, such as carbon in-pulp leaching, were also eliminated from detailed consideration even though they might have been more environmentally sound than the heap leach method proposed to be used in the project.



Response 29

1. Of the specific alternatives considered in the Draft EIS/EIR, none was eliminated from detailed consideration if it could offer an environmental advantage over the Proposed Action. As described in the Draft EIS/EIR (Section 3.3, Alternatives Eliminated from Detailed Consideration) processing alternatives such as carbon-in-pulp leaching are used for higher grade orebodies, generally in excess of 0.08 ounce of gold per ton of ore. This method is inappropriate for the Castle Mountain ore, which contains an average of less than 0.05 ounce of gold per ton. Moreover, there is no apparent significant environmental advantage to the carbon-in-pulp method for which, as stated in the Draft EIS/EIR, "A similar amount of land area is generally required for ore and overburden and the construction of containment facilities, and process equipment would be similar to, or greater than, those for the Castle Mountain Project." The carbon-in-pulp method would also use cyanide, but at greater concentrations than those that would be used for the Proposed Action.

## LETTER 8.1: Robert R. Curry

Comment 30

1. The Environmental Solutions documents reviewed are a vast improvement over the initial Plan of Operations document upon which BLM had originally asked us to make decisions. The hydrologic technical review document (TR) is to be commended for the great improvements it makes over the earlier Kennedy/Jenks/Chilton hydrologic report of August, 1987. I had originally criticized the 1987 report as non-conservative based upon the presumed very high recharge rates assumed for the Lanfair Basin (3,286 acre-feet per annum) and the assumptions made about lack of potential influence of drawdown upon Piute Spring. The present consultants have used a value of 400 acre-feet per year as the recharge to the well-field recharge area. This is still almost two times what I originally estimated (240 acre-feet) and what I believe conservative analysis demands based upon the database and field conditions. The present consultants estimate basinwide recharge of 3,500 to 4,000 acre-feet per annum (TR 3-30), although acknowledging that other methods of estimation yield smaller values. For their modeling, the consultants choose a value of 2,000 acre-feet basinwide infiltration, which, I will show, is definitely higher than probable. The DEIS is thus not based upon conservative analysis. The U.S. Geological Survey report of 1984 estimated total basin recharge to be on the order of 200 to 700 acre-feet per year. I estimate that it takes 570 acre-feet of recharge annually to provide the  $\pm 100$  acre-feet of underflow that feeds Piute Spring annually. This is about one-half the value assumed for the DEIS. Despite significant reductions in proposed ground water withdrawal (originally 1,650 acre-feet per annum, then 1,130 acre-feet per annum; now 725 acre-feet per annum), the present consultants recognize and acknowledge that the proposed withdrawal rate exceeds safe-yield and that the ground water resources are thus to be mined.

Response 30

1. The analyses completed consistently show that the proposed extraction rate of 725 acre-feet per year will exceed recharge to the West Well Field. Thus, it is recognized in the Draft EIS/EIR that for the proposed 10 years of mining, ground water will be "mined." For purposes of the Draft EIS/EIR, this condition was evaluated with respect to its impact on other ground water uses or conditions at Piute Spring. A variety of analyses discussed in the Draft EIS/EIR (Section 4.3 and 5.3 Water Resources) demonstrate that effects of the proposed pumping will not be noticeable on Piute Spring or existing ground water users. From these viewpoints of environmental analyses, it does not appear that a "safe-yield" condition will be exceeded.



2. A number of opinions have been expressed regarding the amount of recharge which occurs in Lanfair Valley. The recharge evaluations by The Mark Group are by far the most extensive and consider a range of precipitation and infiltration possibilities, based on procedures which have been used extensively by the USGS (Environmental Solutions, Inc., 1989). These analyses show a possible recharge range of 2,000 to 5,000 acre-feet per year for the entire Lanfair Valley. The low range of these estimates (e.g., 2,000 acre-feet per year) is considered to be conservative for analyses and modeling purposes. Additional conservatism is provided by assuming that about 860 acre-feet per year of this recharge flows to Fenner Valley, as opposed to Piute Spring. The resulting recharge of 1,140 acre-feet in the portion of Lanfair Valley flowing toward the Piute Range is adequately conservative for estimating worst case conditions.
3. Further, the analyses for the conservative 1,140 acre-feet case show essentially no effect at Piute Spring, even considering long-term conditions, to as much as 1,000 years after the proposed pumping would be stopped. The analyses show that there is no reasonable assumption which would result in a significant impact of the spring water from the proposed well field.
4. Finally, the BLM and County will require the Applicant to install a monitoring well system to observe water table drawdown rates near the well field and in the valley toward Piute Spring. Trigger drawdown amounts based on the modeling work provided in the Draft EIS/EIR will be established to initiate reevaluation and pumping modifications, if necessary (see Section 4.1.5, Water Resources, of this Final EIS/EIR for a discussion of the hydrologic monitoring program).

#### Comment 31

1. Despite the considerable improvement in the present documents, errors and non-conservative assumptions continue to be carried forward from earlier documents. Some of the suggested drilling and testing has been accomplished, but not as much as was initially deemed minimally necessary. Further, the testing done and the data collected are still not revealed in sufficient detail to assess the validity of interpretations made in the DEIS. The conditions of flow at and below Piute Spring are much better defined, but the critical issues of flow and ground water conditions in the Lanfair Valley just above the spring area are still lacking. One well was apparently allowed to cave in and to thus not provide data. The other test well in the critical

spring-area vicinity was not drilled deep enough (PS-2) to provide complete data on potential deeper confined aquifers and the data collected on water levels (TR 3-34) is not presented in a fashion so as to allow analysis.

### Response 31

1. The Commenter's request for additional data on Piute Spring is unnecessary, since acquisition of such data would not change the Draft EIS/EIR (Section 5.3, Water Resources) analysis of aquifer drawdown. Enough data was gathered and presented in the Draft EIS/EIR to sufficiently evaluate the potential environmental consequences.
2. The amount of data available for Lanfair Valley exceeds that normally used to evaluate hydrogeologic conditions in most desert basins. Still, the evaluations presented in Draft EIS/EIR Sections 4.3 and 5.3 (Water Resources) considered a range of possible conditions, using a variety of conservative assumptions. None of the analytical methods evaluated have shown the potential for measurable effects at Piute Spring.
3. Based on subsequent discussions with the Commenter, one additional assumption has been considered. This is to evaluate the potential effect of a partial bedrock high (within the alluvium) extending in a southerly direction from the mine area, between the West Well Field and Piute Spring. This assumption was not initially applied to the analysis (see Draft EIS/EIR Figure 3.5), because hydrogeologically, it would tend to reduce the potential impact of the well field on the spring.
4. The Commenter expressed concern, however, that such a bedrock high could change the well field drawdown pattern, so monitoring wells directly between the well field and spring would not provide an adequate early warning of excessive drawdown conditions. As a result, the monitoring wells required by the BLM and County will include wells arranged to provide an early warning, whether or not the bedrock high condition exists.
5. The monitoring program will also include provisions for the installation of an additional monitor well (W-40) south of well W-37, if monitor well W-37 begins to show evidence of larger than the predicted drawdown rates.



6. The Draft EIS/EIR hydrology discussion was written in a manner to be understandable to the public, in compliance with NEPA and CEQA. The Commenter was subsequently provided with the supporting document entitled *Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring* (Environmental Solutions, Inc., 1989) (Technical Report) for the detailed analysis.

#### Comment 32

1. Figure 3.6 shows the water level in PS-2 to be about 3,050 foot elevation, while Figure 3.8 notes it at 2,977 feet on pages 3-14 and 3-23 of the TR respectively. The discrepancy is very significant in calculating ground water flow conditions to Piute Spring at 2,892 foot elevation. I estimate that the aquifer feeding Piute Spring is clearly confined by the lake beds and caliche in the eastern part of the Lanfair Basin and that wells penetrating it will show rising water tables after first encountering the water table. Those data and observations are critical to interpretation of hydrogeologic conditions. If a well caves because of rising water levels, that too is an important observation.
2. The discrepancy in well PS-2 level data results in a doubling of the ground water gradient (i) (TR-3-33), and if the higher levels are plotted on the very critical Potentiometric Surface Map (Figure 3.8, TR 3-23) along with similar high levels for the caved well PS-1, a map emerges with flow directions pointing directly at Piute Spring and concentrating the flow at that spring. This would lead to rather different interpretations than those presented by consultants which would have us believe that Piute Spring is but one site along a general zone of flow from Lanfair toward Piute and Fenner Valleys. The latter interpretation is necessary if we accept the consultant's conclusions about high recharge rates and thus availability of water for the mining operation (see for example, TR Section 3.3.5.2 re: Sacramento Wash, and the entire Section 3.5.4).

#### Response 32

1. The ground water elevation in Well PS-2 is approximately 2,977 feet as shown in Figure 4.3.6 (Estimated Potentiometric Surface Map). The incorrect level shown in the Draft EIS/EIR (Figure 4.2.4, Conceptual Geologic Cross Section Through Piute Gorge) has been modified to reflect the 2,977 foot elevation. The ground water contours shown in Figure 4.3.6 are based on the correct value and do not require modifications.



Comment 33

1. Despite continued admonitions and claims of scientific conservatism in the hydrogeologic investigations and conclusions, the record demonstrates non-conservative assumptions. The science of ground water hydrology is inexact. Geology must involve considerable interpretation, projection, and modeling of conditions that can only be inferred based upon very incomplete observable records at the ground surface. Thus, hydrogeologic analysis for environmental assessment must be based upon conservative methods that will provide a worst-case or worst-probable-case model. Without such an allowance for errors, environmental effects cannot be reasonably estimated with any factor of safety. In the case of the Castle Mountain Mining Project, much more hydrogeologic emphasis seems to have been placed upon securing adequate water supplies for the mine than upon assessing the effects of their withdrawal upon the regional environment. In this particular case, there is little doubt that there is ample water for the mining operation somewhere in the Lanfair Valley aquifer systems. The issues are not adequate water supplies, but the implications of mining of that water in excess of safe yield levels upon future generations of surface-water dependent organisms and ecosystems in the eastern Mojave Desert region. That part of the work, which was to be the focus of the Environmental Impact assessment process is greatly shortchanged by the non-conservative assumptions made throughout the purported analysis.

Response 33

1. The hydrogeologic evaluations were directed primarily toward evaluating potential effects of the proposed mine-related pumping on Piute Spring. As discussed in Comment Nos. 30, 31, and 34, conservative assumptions have been made for each parameter, based on a thorough evaluation of all data available for the proposed well field and Lanfair Valley hydrogeologic conditions. Reasons for the use of more conservative estimates of recharge or hydrogeologic characteristics have not been justified by the Commenter.
2. Further monitoring wells will be installed to provide an early warning if conditions are different from those predicted. The wells will also be arranged to account for conditions with or without a buried bedrock high across the valley.

Comment 34

1. A primary unsupported assumption is that the subsurface geologic conditions are as cartooned in the Hydrogeologic Cross Section, Figure 3.5 (TR 3-9; DEIS Figure 4.3.5, 4.3-15). The entire model developed in the TR and the DEIS is based upon an assumption of "open" hydrogeologic conditions in the Lanfair Basin (TR 3-21 #2). Although they use the term

"semi-confined" and imply local confining units and response of wells as if confined when pumped for short periods such as in their testing program, they ask us to accept on faith the assumption that "Eventually....the system behaves as an unconfined aquifer" *op cit*. This is an absolutely critical assumption, without which the entire hydrologic assessment stands or fails. In the TR we are told that the well-field was assessed for two cases - one confined and the other unconfined. Analysis of the well field itself is of little public concern, and should be included in the DEIS only to: (1) establish that there are adequate water supplies for the proposed mining operation, and (2) demonstrate continuity or non-continuity of hydrogeologic conditions between the area of proposed withdrawal and Piute Spring. The level of analysis done at the well field should have also been done in the eastern basin near the spring.

2. The TR, at page 5-7, item #4, tells us that, in the case of the analysis of a confined aquifer condition, ". . .the aquifer would be depleted in an unrealistically short period. The Mark Group concludes that the confined condition is not realistic. . . ." They then go on, pages 5-77ff, to provide results of the unconfined aquifer model only. In other words, the Mark Group seems to be saying that if the system is actually confined, there are serious implications for the whole project, so that consideration will not be evaluated(!) All of the analysis is thus based upon the assumption of a completely open surface unconfined aquifer system. This means that recharge occurs wherever infiltration occurs and means that aquifer thickness is measured by the difference in elevation between the static water level and some presumed water-poor basement rock. For the purposes of analysis of potential interference with flows at Piute Spring, the open aquifer model implies that cones of depression will be limited to the vicinity of the well field and that great quantities of saturated alluvium feed Piute Spring from areas not be affected by operation of the well field.
3. Not only is such an open-aquifer assumption not supported by the evidence presented, it is specifically contraindicated by much evidence. The Hydrogeologic Cross Section (DEIS 4.3.5, page 4.3-15) itself shows confining conditions for the eastern 7.5 miles width of the valley under inferred lava flows and the observed lake sediments. There are *no* data from drilling logs east of the test supply wells at the mine site (well W-1) of sufficient depth to define the western limits of the confining lake beds. If the lake surface elevation as exposed in lake sediments near Piute Spring represents the level of the lake when those sediments were deposited, then that elevation should project westward to demonstrate the possible existence of such confining sediments all the way to the border of the well field.



Response 34

1. The Commenter cites the Technical Report (page 3-21) which states that a difference between "driller's report of depth to water" and "static water level" indicates some amount of local confinement. Most of the difference, which averages only 35 feet, could be due to the driller not detecting water the moment it was first encountered. Unless copious amounts of water are present as a result of high permeability, it is normal not to immediately detect saturation with air rotary and essentially never with mud rotary methods. To be conservative, however, the potential for confinement was evaluated extensively.
2. The lithologic logs show no potential confining layers which are continuous across the West Well Field. Alluvial fan deposits, like those of the West Well Field, do not typically contain a regional confining layer. Therefore, it was concluded by The Mark Group that overall, the aquifer in the vicinity of the well field will behave as in unconfined conditions.
3. Arguments in support of the overall unconfined nature of the alluvial aquifer are presented in Appendix K of The Mark Group report entitled, "*Development of a Ground Water Supply for Viceroy Gold Corporation, Castle Mountain Project*" (The Mark Group, 1988). This document is cited as presenting the argument for lack of confinement (pages 3-21 and 3-28 of the Technical Reference) and is on file and available for public review (see the Draft EIS/EIR Chapter 13.0, References).
4. In spite of the lack of evidence for a regional confining layer, the Lanfair Valley digital model takes the conservative approach and assumes a 65-foot thick confining layer over the entire valley (Technical Report, page 3-28, paragraph 2). As modeled, the predicted drawdown after 10 years leaves the basin fully confined at all points farther than two miles from the West Well Field. Hence, the effect on Piute Spring is predicted to be negligible, even if confining conditions were to exist over the entire basin except the West Well Field.

Comment 35

1. Further, the West Well Field does show hydrologic confining conditions with a rise in water table immediately after drilling (TR 3-21). To explain that observation away as "delayed yield" is to beg the question and is definitely non-conservative. The West Well Field data can easily be interpreted as indicating confined conditions below about 3,700 foot elevation. The data base allow perfectly reasonable geologic projection of confining conditions eastward to Piute Spring at an elevation of 2,892 feet. To disprove such a hypothesis would have been



easy with test wells of sufficient depth between Piute Spring and the well fields. There is no explanation for the non-collection of such data, and little support for the assumptions made in the DEIS.

2. Well W-5 in the West Well Field apparently was pushed to a depth to reveal gravel beds or permeable aquifer units beneath volcanic rocks as is shown on the cross-section (DEIS 4.3.5). Such conditions indicate confinement locally, and are probably typical in conditions such as these where Tertiary stratigraphy is much more complex than is illustrated or modeled by the consultants. The Piute Range volcanic sequence differs from the Castle Peaks eruptive sequence, although of contemporaneous age. The interfingering of these sequences and the complexity is not shown and apparently is not even known to the consultants. Conservative analysis would allow for the existence of Tertiary alluvial units of considerable lateral extent, not only as shown in Figure 4.3.5 as confined to the area of well W-5. Such units may very logically provide a major portion of the discharge of Piute Spring, which could be drastically altered by pumping from the proposed well field.
3. Caliche over lake sediments provides a very effective confining layer. The volcanic rocks may or may not act as aquitards (rocks resistant to vertical flow). The data presented do not illustrate the range of hydraulic conductivities that would be expected in this complex series of rocks, so the biases of the modeling cannot be evaluated. The values quoted (DEIS [page] 4.3.-14) for the volcanic rocks imply that they are all rather "tight" and not able to conduct a significant flow of ground water. This is not in accord with the literature and very improbable for some of the Tertiary volcanic rocks in this area. In fact, permeable volcanic rocks capped by impermeable and self-fracture-healing lake sediments overlain in turn by a 20 to 30 foot section of soil K-horizon (well developed caliche) as described (TR 3-13) would create a very effective confined aquifer.
4. If Marty Mifflin's well L-2, a dry hole to 3,600 foot elevation, is justly and fairly contoured using standard conventions and if the water surface elevation before "pumping to develop the well" of  $\pm 3,050$  feet is used for well PS-2 instead of 2,977 feet, then the shape of the Potentiometric Surface map (DEIS Figure 4.3.6, page 4.3-17) looks very different. A "valley" in the potentiometric surface shows up, with all flow leading directly toward Piute Spring. Under these conditions, the disturbance caused by the proposed pumping of the West Well Field would have a significantly greater effect upon Piute Spring flow than is presented in the DEIS. Further, under these contouring conditions, it becomes easier to explain why the East Well Field option was not seriously considered for a water source for the mining

operations. Very little water would exist in that East Well Field. Under the model proposed by the consultants and modeled in the TR in Section 5 which purports to show no impact upon the spring from 10 years of aquifer pumping in the West Well Field, there should be adequate water in the East Well Field. Either it is an open system and water flows from west to east and is available in the east field, or it is a closed system and only the west field has adequate water. One cannot argue whichever case supports the conclusion one wants for the particular sections presented. One cannot evaluate a proposed action such as this using Walt Disney's first law: *Wishing will make it so...* A conservative approach would present both closed and open system models.

5. A closed aquifer system, as is reasonable in this particular case, could have deleterious effects upon Piute Spring in a short period of time. If conductivities assumed by the consultants and completely unconfined systems are assumed, I must concur with their conclusions that effects of pumping 16 miles from Piute Spring would have minimal effects, and even those would only be measurable over very long time frames of centuries. However, confined or even partly confined aquifer systems behave very differently. A confined aquifer where a head or pressure system is necessary to maintain the spring discharge across the intervening fault zones is subject to almost immediate flow reduction when pumped at or below its point of confinement. Although the travel times for water molecules may be on the order of 100 to 1000 years (100 with reasonable conductivities), the pressure change travel time is a matter of seconds. A pressure difference induced by pumping or by preventing recharge travels hundreds of miles per hour, and would affect spring flow virtually immediately. In theory it should be possible to test the hypothesis of a closed versus open aquifer system if we could very accurately measure changes in spring-flow. Unfortunately, we cannot measure the diffuse and complex flow pattern that interacts with vegetation and soil moisture reservoirs to arise finally as Piute Spring flow to an accuracy of better than  $\pm 40$  to 50 percent. We would have to be able to measure it to the hundredth percent to test the hypothesis of a closed system. In reality, if the aquifer were of rather limited extent and mostly confined east of the mine-site, we would not expect significant measurable differences in spring flow to be observed for 50 to 200 years. By then it would be too late to insure maintenance of flow through imported water in the magnitude of 10's of acre-feet per year unless bonding and contingency plans far in excess of conventional requirements were to be imposed. The issue of adequate monitoring, not addressed in the DEIS, will be covered in another outline topic.





Response 35

1. The lithologic logs do not show a regional confining layer at an elevation of 3,700 feet. In any case, over 400 feet of saturated strata exist above the 3,700-foot elevation, and the rocks below that elevation are not expected to yield a significant part of the total volume of water produced.
2. The ground water exploration program specifically investigated the relative hydraulic properties of the volcanics versus the alluvium. Boreholes W-25, W-26, W-27, W-31, W-32, W-33, W-35, and W-36 (see Table B.2 of the Technical Report) were drilled to an average depth of 955 feet to ascertain the water yield of the volcanics. Yields were poor in all these holes. In spite of this, W-25 and W-31 (the highest yielding of the boreholes in volcanics) were completed as wells to provide a limited water supply (50 gpm) for dust control at the crusher. After extensive redeveloping to maximize well yield, both wells showed transmissivities an order of magnitude less than the alluvial wells.
3. Under any circumstances, it would be difficult to hypothesize a continuous confined layer extending for at least 16 miles from the West Well Field to the Piute Spring. There is no evidence that such an unusual condition exists in Lanfair Valley.
4. As discussed in Comment No. 34, to be conservative, the Lanfair Valley digital model does assume that alluvium aquifer behaves as a confined system until 65 feet of drawdown occurs at any location. This analysis shows no noticeable effect at Piute Spring from either short- or long-term conditions.
5. Finally, it is again noted that the water elevation at PS-2 is approximately 2,977 feet. The ground water contours shown in the Draft EIS/EIR (Figure 4.3.6, Estimated Potentiometric Surface Map) are appropriate and the potentiometric "valley" between the well field and the spring does not exist. The East Well Field is not seriously considered, because of the lower permeability of the volcanics (in relation to the alluvium) and not because of potentiometric conditions.



Comment 36

1. A major non-conservative assessment in the hydrologic section of the DEIS is that of recharge. The water-balance model developed by the consultants in the TR assumes that the spring flows comprise a total of about 100 acre-feet per year. I have no reason not to accept this figure as representative. They estimate about 400 acre-feet per year of recharge above the well field. They speculate that this recharge combines with recharge elsewhere in the basin to feed the spring and to flow out of the basin elsewhere into Fenner Basin and into Piute Valley in subsurface fashions that do not contribute to the spring flow. We would probably both agree that the total discharge of water from Lanfair Valley to Piute Valley in the immediate vicinity of the spring is on the order of 200 to 300 acre-feet per year. Much of that evaporates from soil without getting into the channel of Piute Spring, or is intercepted by vegetation before becoming measurable run-off.
2. The model presented in the DEIS assumes a recharge rate from precipitation that combines to provide a basin-wide recharge of 2,000 acre-feet per year. The consultants then assume various hydraulic conditions for geologic materials and thickness of saturated aquifers to estimate an outflow from the basin today that is about equal to the estimated recharge. They thus use one estimate to validate another estimate. This circular reasoning is, in fact, the state of the art in this professional field, and I cannot fault it. The estimates they make are internally consistent. The model they develop must presume that there is excess recharge over and above the 200 to 300 acre-feet per year necessary to support Piute Springs. This excess, they conjecture with no direct evidence whatsoever, is presently lost to adjacent basins by underflow through permeable units and/or watergaps which are low bedrock areas filled with alluvium so that subsurface drainage moves in directions different from surface drainage. They assume this despite all actual evidence that subsurface water moves directly parallel to surface topography.

Response 36

1. Evaluations of flow measurements in the vicinity of Piute Spring lead to the conclusion on page 3-39 of the Technical Report, that the total surface flow into the Piute Spring area probably is on the order of 200 to 250 acre-feet per year. This agrees closely with the Commenter's estimate of 200 to 300 acre-feet per year. Also, page 3-37 of the Technical Report discusses how evapotranspiration results in the immediate uptake of a large portion of the potential surface flow during the growing season. This evaluation is also consistent with the Commenter's interpretation of conditions at the spring area.

2. The Commenter expresses concern, however, that calculations of the amounts of ground water that flow from the Lanfair Valley at other locations may have been hypothesized in order to balance the basin recharge and discharge estimates. Although it is desirable to be able to determine if a balanced condition can be explained by any hydrogeologic hypothesis, that objective was not the primary "driving force" for estimating probable subsurface flows between the Lanfair and Piute Valleys, beneath the Piute Range.
3. Instead, the initial reason for making that calculation was in response to the question of "what is the result of having two very different ground water levels on either side of the Piute Range." This difference in hydrostatic head must result in a gradient across the range and flow from Lanfair Valley to Piute Valley unless the rock has zero permeability. Since that rock does have some level of permeability, it can only be concluded that some level of flow occurs between the valleys. The estimate of that flow, provided on page 3-33 of the Technical Report is based on reasonable assumptions of the volcanic rock properties. The fact that the estimated range of underflow is comparable to that which would be expected from the water balance, is valuable in that, it adds a level of confidence that the area analysis procedure is not flawed.

#### Comment 37

1. These *excess* water flow assumptions are necessary, in their model, to permit mining development and to mitigate the drawdown of the nonconfined aquifer. Only with adequate recharge rates can the models they propose stand up, and then only if the aquifer is unconfined. Even with the excess water hypothesis, they conclude that there will be a net withdrawal of water from the well field in excess of that recharged to it ( $400 \pm 100$  acre-feet per year recharge for the well field itself, with 725 acre-feet per year withdrawal). Without the excess water hypothesis, which is unsupported from any data base whatsoever, the drawdown model and shape of the cone of depression for the very non-conservative model would probably indicate need for a different well field design and would certainly indicate a much larger area of influence caused by water mining. This entire train of assumptions is non-conservative and, in fact, contrary to evidence that does exist. That evidence was reviewed in the 1984 USGS report, which concluded that the total discharge of the basin was on the order of 100 to 630 acre feet per annum. The consultants supporting the Castle Mountain Project Application have consistently tried to estimate recharge based upon assumed precipitation and infiltration values that are dubious.



2. The basin recharge (TR Section 3.5.1) was estimated by the Mark Group based upon Larry Maxey's 1949 Nevada data base that indicated infiltration of no precipitation in areas with less than eight inches annual precipitation, and three percent infiltration to the water table for regions with 8 to 12 inches of annual precipitation. Since precipitation data do not exist for the Lanfair Valley area, an elevation-weighted estimate is created, based upon regional California, Arizona, and Nevada stations (TR page 3-2, Figure 3.1, and Figure 3.9, page 3-31). The method is sound, however the data base is not conservative.
3. The Maxey infiltration data are based upon all of Nevada with areas of considerable snowfall and winter precipitation which is more effective at wetting the soil and soaking into it. The elevation-weighted precipitation estimates are based upon data stations with monsoonal (summer northward-flowing moist air) precipitation east of the Mojave Desert as well as stations within it. The summer thundershower precipitation events are less effective at ground water recharge than are the winter events. The Castle Mountain site receives both kinds of precipitation events, and the dominance of one type over another changes over long periods of time over multiple decades. Desert mountain range precipitation is as much a function of the shape of the range, including aspect toward storm tracks and width of higher elevation areas parallel to storm travel direction, as it is of elevation alone. In the case of Lanfair Valley and the New York Mountains at its head, the range is narrow and precipitation-bearing air masses can break through many lower divides without dropping much moisture for both Pacific frontal and subtropical air flow patterns from the northwest and southeast respectively.
4. Thus, absent other evidence to the contrary, the conservative interpretation of the precipitation estimation data would be to adopt a potential precipitation of 8 to 10 inches for the highest elevations above 6,000 feet. In fact, the DEIS (page 4.3-2) adopts 11 inches as that precipitation value and nine inches above 5,000 feet. If the recharge area is to be defined as all of the area where eight inches or more precipitation falls, then the cutoff they assume is at about 4400 elevation. For the area above that elevation, they assume a three percent infiltration effective recharge value for the entire area above 4,400 feet. Note that they have chosen the top end of the Maxey value which represents the 8 to 12 inch precipitation range zone. Since zero to eight inches has zero recharge, it is implausible to assume that from eight inches and above will have three percent. More reasonable would be a value of one percent for eight to nine inches; two percent for 9 to 11 inches, and three percent for 11 to 12 or 13 inches (which is not represented in the Lanfair Valley recharge area). A reasonable value of recharge would be two percent for the non-bedrock areas of the entire >4,400-foot recharge



zone. For the higher bedrock areas, short-period rainstorms or snowstorms tend to evaporate from the rock surfaces directly and not contribute to recharge. Apparently, no consideration has been given to this geologic component of recharge.

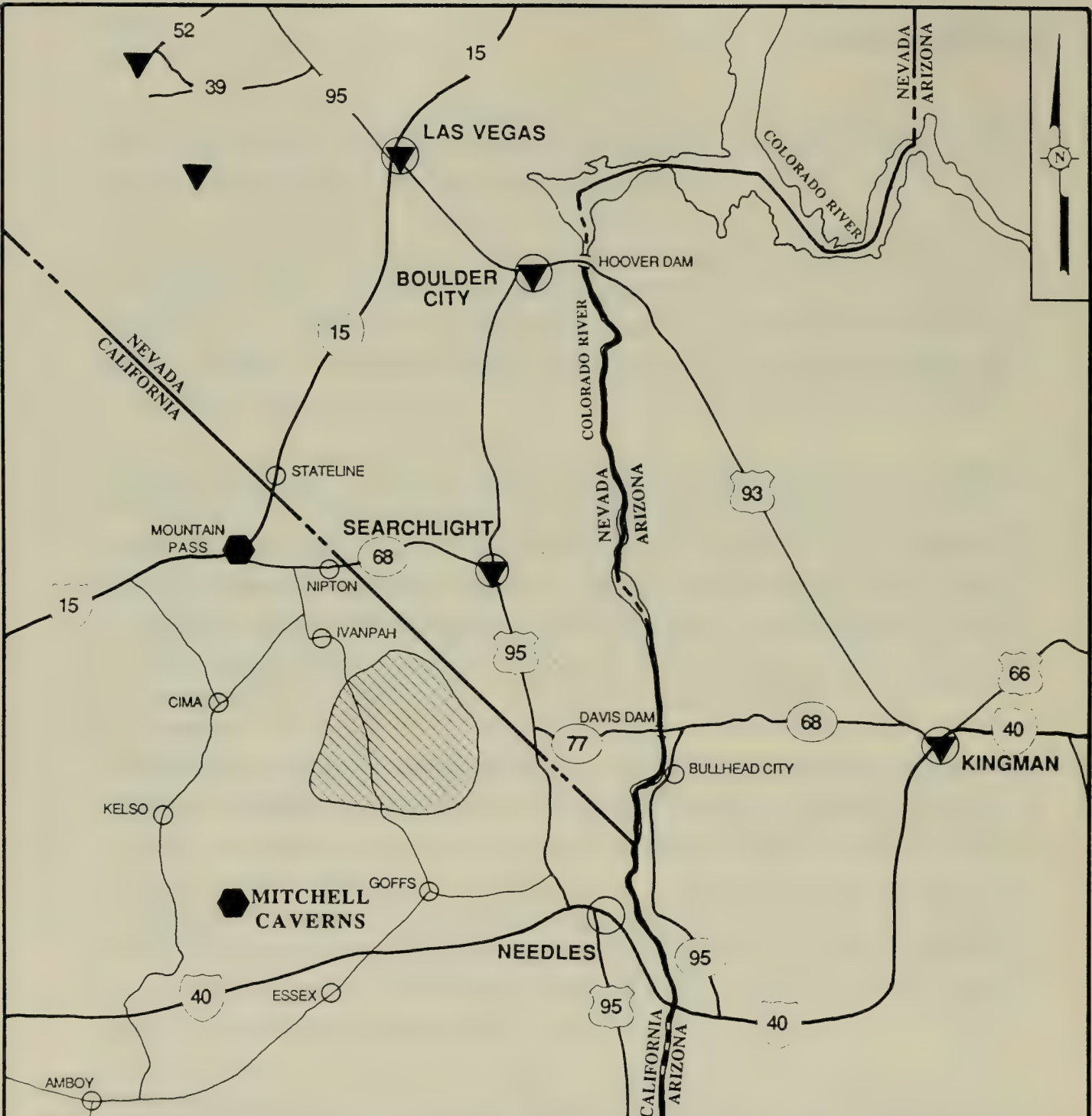
5. I estimate that .015 feet to .02 feet of recharge occur annually in the area of effective recharge (two percent of nine inches or three percent of eight inches). Over the recharge area this amounts to about 800 to 1,100 acre-feet per year of recharge. The DEIS "worst-case" analysis model uses a figure of 2,000 acre-feet per year; presumably inflated based upon the unsupported precipitation estimates.
6. It is possible to verify the precipitation estimates. One method involves use of vegetation in thin-soil sites that is dependent upon seasonal precipitation. The vegetation acts as a "proxy" meteorological station. It cannot be used alone nor can it be used to differentiate between slightly different precipitation amounts, but it is useful for corroborating evidence and does integrate conditions over several years, which a short-period rain gauge does not. During the time of preparation of the DEIS, it is surprising that no meteorological data were collected. Such would be a very important component of any hydrologic analyses.
7. Conservative methods would thus suggest a reasonable recharge of about one-half of the value assumed in the DEIS. With that value, we may estimate about 570 acre feet per year as the amount of recharge directed toward the northeast subbasin that feeds Piute Springs. Five hundred seventy acre feet is uncomfortably close to the estimate of 200 to 300 acre-feet necessary to support the spring annually. A conservative analysis would show that the basin is delicately balanced hydrologically with recharge about equal to outflow and that a majority of that outflow feeds the Piute Spring area. That is precisely the conclusions reached by the U.S. Geological Survey in their 1984 report.
8. In short, the delicate hydrologic balance, coupled with lack of confined aquifer modeling for at least the part of the basin from the mine-site eastward, leads to the conclusion that the proposed mining plan cannot be accepted based upon a deficient environmental impact analysis.

#### Response 37

1. This comment expresses concern that the recharge estimates developed by The Mark Group and used in the Technical Report are not conservative because the precipitation data (Rush and Huxel, 1966) and/or infiltration estimates may not be correct.

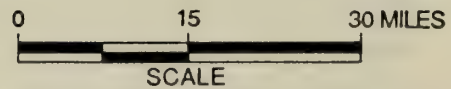
2. The locations of the regional California, Arizona and Nevada precipitation stations used by Rush and Huxel are shown on Figure 4.9 (Location of Precipitation Stations in the Vicinity of Lanfair Valley). In response to the assertion, that the database is not conservative, data were obtained for two additional precipitation stations, Mountain Pass and Mitchell Caverns, which are closer to Lanfair Valley. The location of these stations is shown on Figure 4.9. Information respecting elevation, mean annual rainfall, and seasonal variation in precipitation, for these two locations are shown in Figure 4.10 (Monitoring Data at Mountain Pass and Mitchell Caverns Weather Stations).
3. Figure 4.11 (Relationship of Precipitation to Elevation) is Figure 3.1 of the Technical Report, with data for Mountain Pass and Mitchell Caverns added. The close agreement to the baseline data confirms the applicability of the Rush and Huxel data for use in estimating precipitation levels in Lanfair Valley. Moreover, a further comparison of seasonal variations in rainfall for these two stations, shown in Figure 4.10, shows very similar characteristics, indicating that regional conditions in the area near Lanfair Valley do not greatly vary. Based on both the original and new data, there appears to be no basis for assuming that precipitation in Lanfair Valley will be appreciably different from that estimated by The Mark Group. Therefore, it is concluded that the mean annual precipitation (isohyetal) data presented in the Technical Report (Figure 3.9, Mean Annual Precipitation), which also was presented in Friewald's 1984 paper, is reasonable for estimating water balance conditions.
4. Resolution of different viewpoints on infiltration rates is more difficult to address quantitatively because quantitative recharge data do not exist. In relation to the Commenter's concern for use of the Maxey-Eakin procedures for the Lanfair Valley, it is noted that the technique is often applied to southern Nevada. It was used, for example, in cooperative studies between the USGS and the Nevada Department of Conservation and Natural Resources (Rush and Huxel, 1966; Clancy, 1968), for the Ivanpah, Piute, and Eldorado Valleys on either side of the Lanfair Valley. The Mark Group studies also addressed the concern that summer precipitation may not result in the same type of infiltration that occurs during winter. One of the alternatives they considered in developing their estimate of a Lanfair Valley recharge rate of between 2,000 and 4,000 acre-feet was that only 65 percent of the total annual precipitation was effective for infiltration. This estimate of winter infiltration was determined from Friewald's 1984 investigations.





**LEGEND**

- STATE BOUNDARY
- CITY OR TOWNSHIP
- PRECIPITATION STATION INCLUDED IN RUSH AND HUXEL CURVE (1966)
- OTHER PRECIPITATION STATIONS
- APPROXIMATE BOUNDARY OF LANFAIR VALLEY



**FIGURE 4.9**

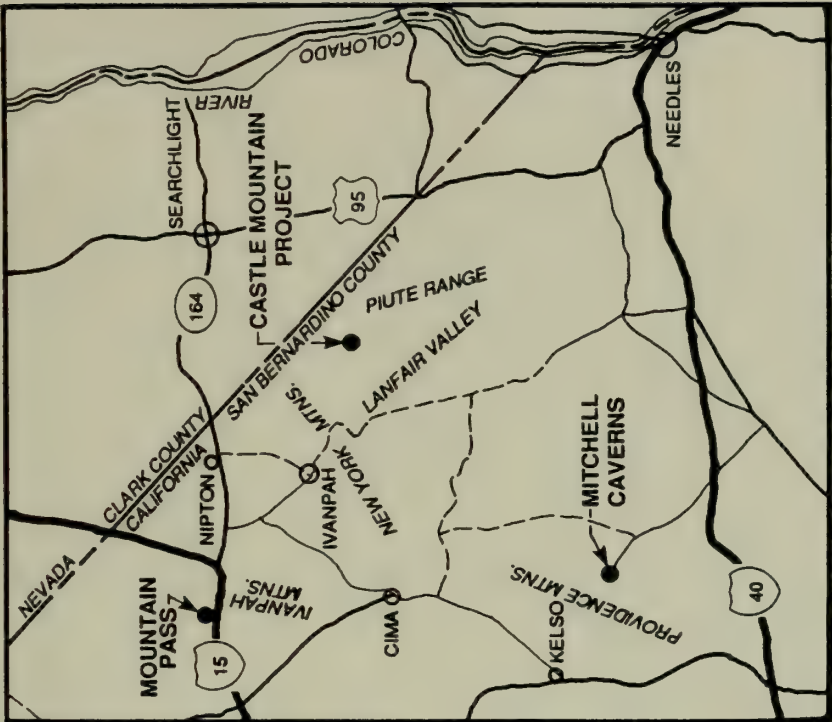
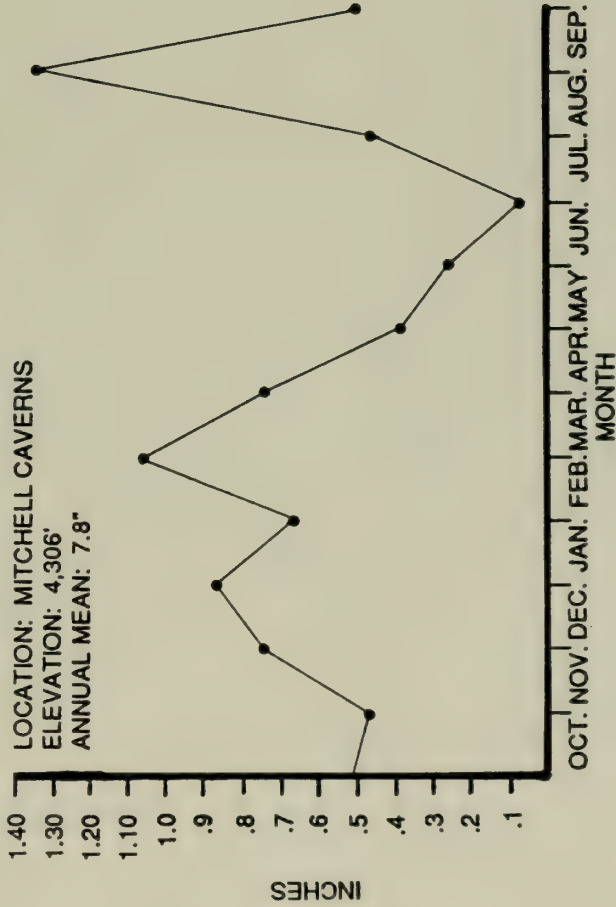
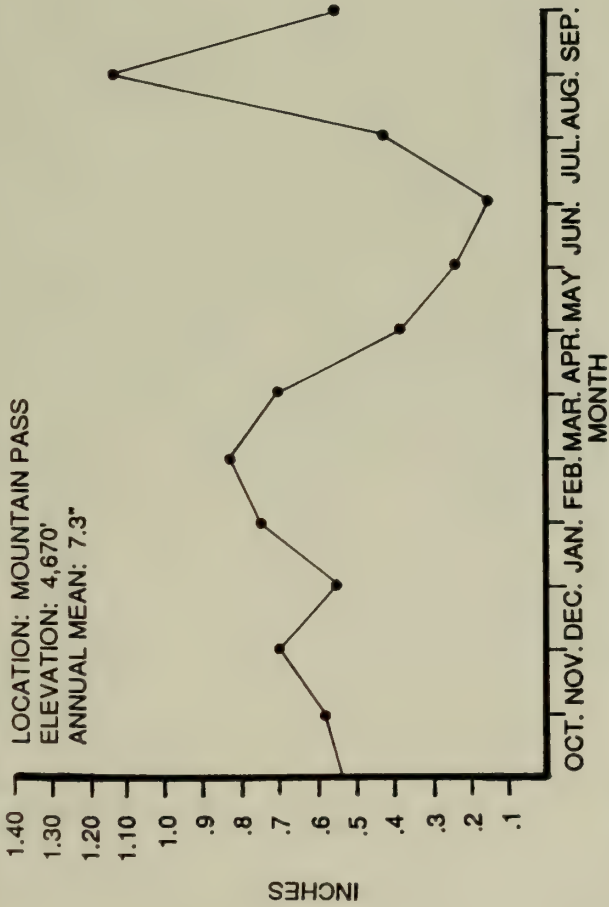
**LOCATION OF PRECIPITATION STATIONS IN THE VICINITY OF LANFAIR VALLEY**

**CASTLE MOUNTAIN PROJECT**

**ENVIRONMENTAL SOLUTIONS, INC.**

SOURCE: THE MARK GROUP, ENGINEERS AND GEOLOGISTS, INC.  
DRAWING NUMBER 1. DATED: AUG. 1, 1989.





LOCATION MAP

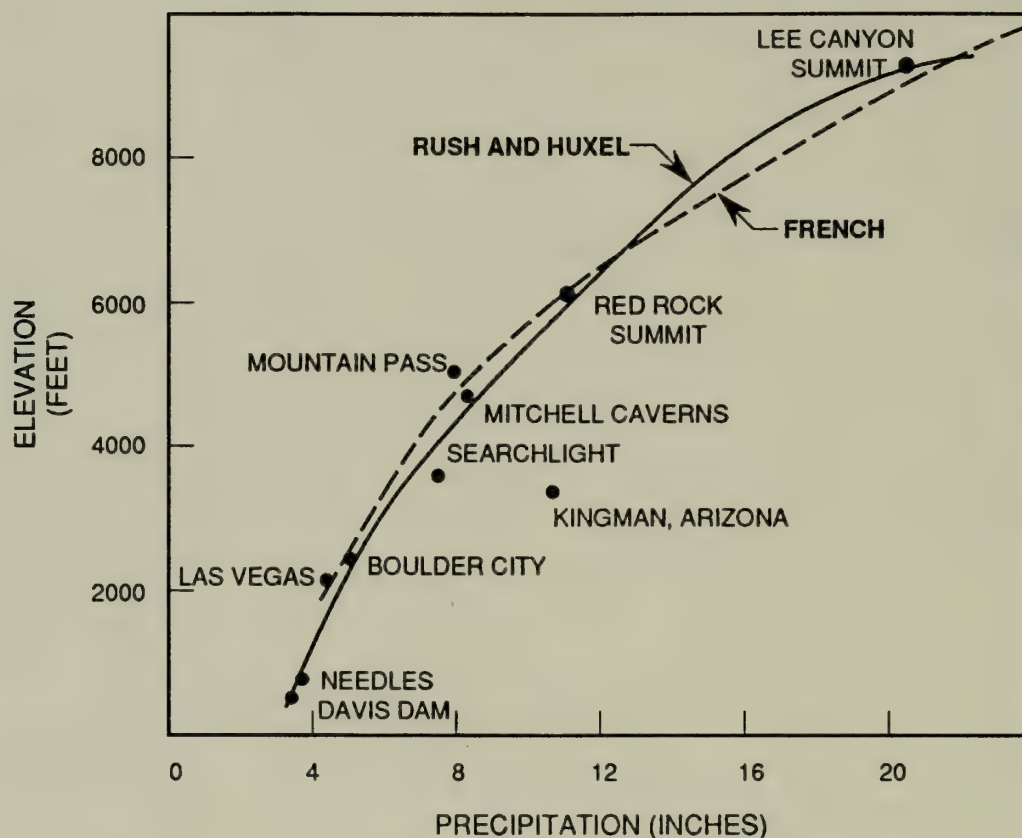
FIGURE 4.10

MONITORING DATA AT MOUNTAIN  
PASS AND MITCHELL CAVERNS  
WEATHER STATIONS

CASTLE MOUNTAIN PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

SOURCE: STATE OF CALIFORNIA DEPARTMENT OF WATER RESOURCES,  
JUNE 1980, CALIFORNIA RAINFALL SUMMARY, MONTHLY TOTAL  
PRECIPITATION, 1849-1979.



RELATIONSHIP OF ELEVATION TO  
AVERAGE ANNUAL PRECIPITATION

NOTE: THE MOUNTAIN PASS AND MITCHELL CAVERN DATA HAS BEEN ADDED TO THE ORIGINAL RUSH AND HUXEL CURVES AS FURTHER EVIDENCE OF THE APPROPRIATENESS OF THIS ELEVATION VS. PRECIPITATION RELATIONSHIP FOR THE LANDFAIR VALLEY AREA.

FIGURE 4.11

**RELATIONSHIP OF  
PRECIPITATION TO ELEVATION**

CASTLE MOUNTAIN PROJECT

**ENVIRONMENTAL SOLUTIONS, INC.**

SOURCE: RUSH AND HUXEL, 1966  
FRENCH, IN PROGRESS

5. Regarding concern that the majority of recharge reports as discharge at Piute Spring, it appears that the Technical Report provides the most rigorous evaluation available to date. The estimates of additional underflow discharges to Fenner and Piute Valleys are based on considerable data not previously analyzed, and flow estimating procedures which are commonly used in hydrogeologic evaluations.
6. In summary, it is concluded that the original Draft EIS/EIR background water balance work is reasonable and appropriate. The only way to reasonably resolve the concern about water balance estimates and importance will be to provide a monitoring system which will provide early warning that conditions are significantly different than those anticipated. The monitoring well arrangement which will be required by the BLM and County will be arranged to provide an indication of large differences from the design assumptions, if any, soon after pumping is started so that modifications can be made if required.

#### Comment 38

1. The issue of *monitoring* is very inadequately addressed in the DEIS. A much more extensive monitoring well field would be necessary to adequately test and assess the open or confined character of the aquifers that may be pumped before the project is approved. Since the assumption is being put forward that the system to be pumped is only an unconfined system which will not depress groundwater levels much beyond the mine-site itself, an adequate monitoring well network may not seem necessary. However, it is reasonable to propose that the East Well Field wells may not respond rapidly to drawdown of some wells of the West Well Field due to inadequate depth and hydrologic isolation of multiple aquifer systems. My own thinking on this has changed considerably as the limited data have been collected. I had thought, in 1987, that the unconfined aquifer hypothesis was reasonable. The data in the DEIS refute that. Now a monitoring network adequate to test water levels and gradients adjacent to Piute Spring (shallow, cased, capped wells on the south, north and at two positions along the canyon course) would be necessary to better understand and evaluate impacts of unforeseen hydrogeologic interconnections. At least two additional deep wells through the lake beds between the mine site and the spring in Lanfair Valley would also be mandatory. If multiple confined units were found in those wells, provisions to isolate and test static water levels in each water-producing unit would be necessary. Often multiple wells are safer.



2. Evaluation through monitoring of the recharge estimates would also be necessary, with both precipitation stations and methods of direct recharge monitoring on alluvial fans. The recharge map (TR Figure 5.6) could provide a guide for placement of recharge stations. It appears that consultants have reapportioned bedrock-rejected recharge elsewhere in alluvium. That hypothesis should be tested. I very much doubt that it works as hypothesized.
3. Operation of the well field itself will self-monitor the internal assumptions locally. If cones of depression do not develop as rapidly as assumed, then more complex interrelationships with partial or complete vertical isolation or slowly-leaking aquifers may merit changed monitoring plans.

#### Response 38

1. As discussed, the BLM and County will require a more extensive ground water monitoring program, largely as a result of concerns raised by this Commenter. The additional monitoring wells will be located to provide an early warning at the West Well Field and the possible alternative flow pathways between the West Well Field and Piute Spring. The monitoring well levels and Piute Spring flows will be monitored periodically throughout the life of the pumping activities. The agencies will establish "triggers" based on the decline of ground water levels in excess of those predicted by the hydrogeologic model used in the Draft EIS/EIR. These triggers would result in predetermined additional mitigative actions, including:
  - Development of an additional monitoring well upgradient from Piute Spring.
  - Recalibration of the hydrology based on the pumping history at that time.
  - Implementation of special procedures which will be specified in a "Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring."

The contingency plan will include an estimated cost to implement procedures to supply water to Piute Spring in the event the rate of decline in water levels at Monitor Well W-37 exceed the rate predicted at that location in the hydrogeologic modeling for the Draft EIS/EIR.

## LETTER 8.2: Robert C. Stebbins

Comment 39

1. First of all, there are some positive things to bring out. This present document indicates some marked improvements in a number of areas. For example, the drip method of leaching the heap leach pads is now to be used. There is one negative aspect: the sprinklers continue or are proposed to continue at the sides of the pad. And this will in considerable part negate the value of going to the drip method. If there are large numbers of sprinklers along the sides of the pads, we still have the problem of birds and other animals getting into the water, birds preening and so on, and getting the leachate. However, greatly reduced sprinkling is certainly a positive step. The closed system of pipes to convey the leachate is also a very good step forward. The plan to vanpool the employees to and from the area, thus reducing traffic on the access road is excellent. The plan to hire an environmental specialist or contracted consultant to monitor the effects on wildlife and the success of the various wildlife and vegetation programs is also an excellent plan. The reduction in water use from an estimated 1,140 acre-feet a year to an estimated 725, resulting mainly from the drip method, is a positive step. The plan to provide the employer education as to wildlife values is certainly a desirable activity.

Response 39

1. Comments noted. Plans for sprinkler irrigation were eliminated and replaced with drip irrigation as stated in the Supplement (page 3-28).

Comment 40

1. Let me discuss the wildlife sections of the document first. As I mentioned, there are still problems with the heap leach method of using sprinkles along the sides of the pads, where the pads slope. I realize that there will not be significant ponding in such areas, but there still is a problem. I hope that there will be a way found to eliminate sprinkling altogether. Also, it's not clear to me what happens to the solution that works down through the pad and moves out to the sides on the plastic liner that covers the ground surface. Will there be a distance between the edge of the pad and the connecting pipes where this water will be exposed? Or is the water to be conveyed in pipes inserted into the sides of the pad? This is not clear. I think we still have a problem if water is flowing even a short distance from the edge of the pad into these pipes. Once again, the leachate is exposed to wildlife over quite an extensive area, if that is the case.



Response 40

1. Plans to distribute solution with sprinklers were eliminated in the Supplement (page 3-28).
2. While the detailed engineering of connecting pipes for solution transport has not yet been completed, the planned configuration would be to cover pipes at the edge of the heap leach pads, such that no significant solution would be available to wildlife.

Comment 41

1. I'm concerned about some aspects of the Plan for fencing around the solution ponds because it's not made clear how deep the metal portion of the fence to be located at the base of the fence is to go into the ground. I recommended some time ago at least one foot into the ground to block burrows, and I understand the consultant to the company, Dr. Bayard Bradstrom, has urged that the metal go down two feet, which in my view would be much more desirable to intercept gopher burrows and other tunnels used not only by the burrowing rodents, but also used by other animals such as snakes and other creatures, that make use of the tunnels constructed by the burrowing animals. So I think that it's a good plan to make the solution ponds fenced with the chain link fencing and have the metal base, but I believe that it should be made clear that this metal is to go well into the ground.
2. I'm also concerned about the fencing particularly along the exposed desert side of the big heap leach pads. Simply a barb-wire fence will not be adequate to inhibit the movements of many kinds of wildlife. I think that it would be desirable to have similar fencing as is used around the solution ponds along the portion of these big pads that are facing the undisturbed desert. Here again I would recommend the metal base going well into the ground, and with emphasis on the portion of the pad that is adjacent to the undisturbed terrain.

Response 41

1. The Draft EIS/EIR (page 6.5-2) required that fencing surrounding the solution ponds be designed to exclude wildlife. The specific configuration and depth of the fencing has not yet been determined. However, it is expected that the Commenter's concern for burrowing animals is satisfied by the design adopted for solution storage in steel tanks (see Supplement Section 3.2.2, Solution Storage). Although the drip irrigation system proposed for the heap leach pads appears to alleviate the concern of wildlife exposure to cyanide solution, a mitigation measure has been added requiring chain link fencing surrounding active leaching



areas (see Section 3.2, Mitigation Measures Incorporated Into the Project, of this Final EIS/EIR). Monitoring of the fencing status would be completed to ensure burrowing animals do not become a problem.

#### Comment 42

1. The document proposed a nylon net, an inch or less in mesh, or a net, not necessarily a nylon net, perhaps, an inch or less in mesh, that is to cover the solution pond areas or, as an alternative, flotation devices that would prevent access to the leachate. A lot depends here on how effectively the edges of these covers are secured. If the net just goes over the chain link fence, then many creatures can get through the chain link mesh. I'm also concerned with respect to the use of netting that birds and bats may become entangled in. I think we need to determine whether this will create a problem. Now presumably the bats' sonar will pick up on the presence of the net but I don't think we know that at this point and we should check that out. The environmental consultant certainly would be a person to monitor this and watch it very closely.
2. Flotation devices need to be secured by a canvas or flexible border that is securely anchored to the ground or to some bordering connecting structure, so that we do not have animals getting underneath the bordering, flexible material and into the leachate.

#### Response 42

1. The adopted design concept for solution storage in steel tanks should satisfy the Commenter's concern (Supplement Section 3.2.2, Solution Storage).
2. Netting that would be used for the emergency solution storage basin would be a small mesh and securely fastened at its edge to preclude animal entry by animals. See Section 3.1 (Final Project Design) of this Final EIS/EIR for a discussion of the solution storage facilities.

#### Comment 43

1. Perhaps in my hasty reading I have missed something on this, but I'm wondering to what extent dogs and cats would be allowed in the area. Will employees be allowed to bring, for example, a pet dog? Such animals could quite significantly impact the wildlife in the area. With these mines running 24 hours a day and animals being brought in, if that is indeed the case, there could be quite a long-term drain on local wildlife. Perhaps that's addressed somewhere, but I did not find it and I think we should know what the position of the company is going to be on that.

Response 43

1. The Commenter's concern regarding potential conflicts between domestic animals and local wildlife is acknowledged. A mitigation measure has been added to satisfy this concern and is included in Section 3.2 (Mitigation Measures) of this Final EIS/EIR.

Comment 44

1. It is proposed that roosting ledges will be created in the walls of the pits to provide sites for raptors. My expectation is that these sites will be primarily used by ravens; that indeed they may encourage the establishment of ravens in the area. I think it's highly improbable that a golden eagle pair would nest in such an area, an area of such intense human activity, and I think that the same may be true of many of the other raptors. So I question whether it is worth the time and effort to try to create such places.

Response 44

1. Comment noted. The recommendation for raptor roosting ledges has been deleted (see Section 3.2, Mitigation Measures Incorporated Into the Project, of this Final EIS/EIR).

Comment 45

1. In C-14, Table 5, it is mentioned that migratory birds are not expected to stay in the area because of lack of food. Well, I presume this is very likely; but, there seems to be an implication here that because of that probability, that perhaps there's less danger to the migratory birds. If leachate is exposed the migrants are very likely to find it in their search for water and will be poisoned by it. So I don't feel any comfort in the thought that the migratory birds will not remain for any great length of time in the area.

Response 45

1. This statement in the Draft EIS/EIR was made as an observation of the habits of these birds. The analysis in Section 5.5 (Wildlife) did not rely on this habit to reduce potential exposure to cyanide solution, but instead required physical isolation measures to ensure that birds could not gain access to solution.

Comment 46

1. On page 5.5-7, Item 4, it is stated: "Implementation of the measures set forth above would essentially eliminate wildlife exposure to cyanide solution and no significant impact is

anticipated." The information pertains to solution ponds, heap leach piles, solution handling. However, as I have pointed out, I think as things now stand and without some of the concerns that I have expressed being addressed, there could be a significant impact on wildlife.

#### Response 46

1. See Response Nos. 41 and 42.

#### Comment 47

1. I have on a number of occasions expressed concern about the prospects for revegetating the area through human intervention. My personal feeling is that most revegetation will come about through a natural process. However, certainly every effort should be made to try to speed up that process. One of the things that concerns me is that the lengthy plans for revegetation may give people uninformed as to the difficulty of growing desert, native vegetation, the feeling that more can be done than really can be expected.

#### Response 47

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR for a discussion on natural revegetation.

#### Comment 48

1. *Note: The Commenter closed by expressing a number of general opinions about open pit heap leach mining that are not reprinted here. Please see the original comment in Appendix C if more detail is desired.*

#### Response 48

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of opinions or project approval.
2. With application of proper environmental planning on other proposed operations as for the Castle Mountain Project, the environmental concerns of the Commenter should be satisfied.



## LETTER 8.3: H. G. Wilshire

Comment 49

1. The depth of investigation of reclamation procedures recommended in the DEIS is clearly revealed by the fact that the bibliography contains not a single reference to the large literature on the problems encountered in arid land reclamation in general and the Mojave Desert in particular. Several books, including two by the National Academy of Sciences, and hundreds of scientific papers have been published on the subject, mainly between 1979 and present. Instead of a thorough review of problems and solutions, the DEIS proposes a learn-as-you-go project and pretends that everything we need to know will be learned in the lifetime of the project.

Response 49

1. See Response No. 19, paragraph 2. The Draft EIS/EIR cited a recent USGS paper on this subject, because it reviews about 100 references on vegetation disturbance and natural succession, especially throughout the Mojave Desert. The revegetation research program is initiated to develop effective remedies to site-specific revegetation problems.

Comment 50

1. As is well known from a long history of open pit mining, the following kinds of problems will be encountered in minimizing the effects of mining: (1) the excavation of the pits will disrupt at least lower order drainages; (2) the pits themselves will have centripital drainage, which will diminish runoff to downstream tributaries; (3) the mine waste dumps will disturb at least lower order drainages and increase stream gradients; this will accelerate upstream headcutting; (4) heap leach piles will have physical characteristics different from waste dumps and will be subject to accelerated wind and water erosion, slump, and subsidence; their placement adjacent to main drainages will assure sidewall erosion during flood stages; (5) the pits will be safety hazards, permanently unproductive, and visual impairments; (6) spoils and heap leach piles will be visual impairments; (7) stockpiling soil for the duration of the operation will degrade the soil productivity; (8) revegetation of disturbed arid lands has been well-studied and entails a number of recognized problems where the goal of post-mining land use intimately involves the vegetative cover, as is the case in the proposed project.

Response 50

1. See Response Nos. 14, 15, 16, 17, 19, and 20.

Comment 51

1. The treatment of the geology, on which hydrologic speculations are based, is not competent. There is a great deal of site-specific modern geologic and geophysical information in the public domain that is not cited, and the field examination(s?) conducted in support of the DEIS is woefully inadequate. The result is egregious errors of fact, erroneous rock-unit correlations, naively oversimplified characterization of the hydraulic properties of Tertiary bedrock, and misrepresentation of structural relations, among other problems. Field examination, or at least a competent review of existing literature, should have been made of the stratigraphy of Tertiary rocks exposed in the project area. A transect between Quail Spring and Old Homestead Road would have shown that Tertiary volcanic rocks of the Piute Range overlie the Castle Peaks Tertiary volcanic rocks. Modern studies have shown that the basal units of these sections are of closely similar age, but the eruptions that formed the Piute Range section continued for some four million years after the Castle Peaks eruptions ceased. The two sections are separable, and although some authors have suggested that the Castle Peaks volcanic rocks extend under the Piute Range, *nobody* has ever suggested that the Piute section extends beneath the Castle Peaks as shown in Figure 4.3.5.

Response 51

1. The Draft EIS/EIR intentionally did not separate the Miocene volcanics of the Piute Range, Castle Peaks area, and the Castle Mountain area. There was no need to differentiate the various units based on age or lithology. Volcanics units shown on Figure 4.3.5 (Lanfair Valley Hydrogeologic Cross-Section), with the exception of the Quaternary volcanics, are of Miocene age. The fact that the Piute Range volcanics are younger by possibly five million years (m.y.) was considered immaterial. There are seven Miocene volcanic units mapped in the Lanfair Valley area which range up to 18.0 m.y. Those exposed in the Piute Range are less than 12.8 m.y. and represent the last phase of Miocene volcanism. For a thorough description of the various volcanic units and associated tectonism, the Commenter is referred to R.D. Turner's thesis (1985). We certainly concur that the Piute Range volcanics are the younger Miocene units in the Lanfair Valley area. No comments were made to the contrary in the Draft EIS/EIR.
2. Draft EIS/EIR (Figure 4.3.5, Lanfair Valley Hydrogeologic Cross Section) shows a hydrogeologic cross-section that was used to develop input to the McDonald and Harbaugh (1984) USGS hydrogeologic model used for the Draft EIS/EIR analysis. The section was drawn using published geologic maps and was field checked. No differentiation of the seven volcanic units was attempted. There is nothing on the cross-section to infer that the Piute



Range volcanics and the Castle Peaks (New York Mountains) volcanics are younger or older. According to the "law of superposition," the Miocene volcanic unit has been shown correctly relative to both the younger and older sequences. An experienced geologist would recognize that the queried geologic contacts and rock units are considered uncertain or inferred; they were shown based on projection and the judgement of the geologist constructing the cross-section. The Commenter should also consider that range bounding faults have elevated and/or down dropped the Miocene volcanics. Although the extent of juxtaposition of the various units is unknown, to drill borings to 2,000 feet would not substantially enhance the database for this study. That the Miocene volcanics underlying Lanfair Valley are lower in elevation than those shown in the New York Mountains or within the Piute Range does not suggest that they are older or younger.

3. The reason the Miocene are lower in elevation is because of faulting (down dropping) that occurred in Quaternary time.

#### Comment 52

1. In addition, what is labelled "Bedrock Exposure" on Figure 4.3.5 is shown to overlies Quaternary alluvium! Thus, the section shown in Figure 4.3.5 is partly upside down.

#### Response 52

1. There are Miocene age volcanics exposed at the location shown on the cross-section as shown in the Draft EIS/EIR (Figure 4.3.5, Lanfair Valley Hydrogeologic Cross Section). The subsurface configuration of the bedrock is shown and lies between two faults that were projected westward from the Castle Mountains. The subsurface bedrock high was intentionally eliminated for the following reasons:
  - The bedrock high does not crop out continuously across Lanfair Valley, and subsurface water gaps that are alluvial filled do exist.
  - If the bedrock high were left on the section, one could postulate that ground water movement may be impeded by the presence of the bedrock high.

The cross section is primarily to illustrate hydrogeologic conditions and was used for the hydrogeologic model. The bedrock high was eliminated even though it may exist, to use the conservative assumption that ground water is free to flow along a straight course from the north end of the valley to Piute Valley.



2. Geologic cross sections A-A' and B-B' as shown in the Draft EIS/EIR (Figure 4.2.2, Lanfair Valley Geologic Cross Sections), show in a general way the central inferred ridge designated as Lanfair Buttes. The Draft EIS/EIR (Section 4.3.3.2, Lanfair Valley Conditions, [paragraph 2]) discusses the bedrock high conditions in the central valley area.

#### Comment 53

1. Moreover, there is no basis whatsoever for showing Cretaceous granitic rocks beneath the entire section of Figure 4.3.5: the "projected antiform" is a complexly faulted anticline with a core of Precambrian gneiss, which must be present beneath part of Lanfair Valley.

#### Response 53

1. Whether the basement beneath Lanfair Valley is Cretaceous age granitic rocks or Pre-Cambrian metamorphic is immaterial with regard to the flow of ground water in the basin.
2. To date, no deep borings have been drilled into the bedrock which underlies the Miocene volcanics in Lanfair Valley. Therefore, one can only speculate what type of rock exists at depth (i.e., plus 2,000 feet). The Draft EIS/EIR (Figure 4.3.5, Lanfair Valley Hydrogeologic Cross Section), shows a Cretaceous age granitic basement. These granitic intrusives have been mapped to the west in the Midhills and New York Mountains, to the southeast in the Billy Mountain area, and in a larger outlier east of the Piute Range. Based on regional geologic maps, there is a major north-northwest trending series of Cretaceous age intrusive plutons reaching from the south end of Lanfair Valley to the south end of Death Valley. This broad belt of granitics was inferred to underlie most of Lanfair Valley. The Castle Mountains do appear to be underlain by Pre-Cambrian age high grade metamorphic gneisses. Most likely the northeast extent of the valley is underlain by the Pre-Cambrian basement. Also, reported by Turner (1985) is xenocrystic quartz within the Miocene volcanics suggesting that a granitic basement, presumably of Cretaceous age, may exist in the region.

#### Comment 54

1. An adequate field examination or literature review would show that major parts of both the Piute Range and Castle Peaks Tertiary sections are composed of poorly consolidated conglomerates, coarse sandstones, and volcanic breccias that have hydraulic characteristics a lot closer to the Quaternary alluvium than to lava flows. Yet, a very small range, well below that of "Unconsolidated sediments," of hydraulic conductivity is quoted (page 4.3-14), with a

very low porosity, for "volcanic rock," and is presumed to apply to the entire Tertiary section. Moreover, the quoted hydraulic conductivity and porosity appear to be applied uncritically to highly fractured rocks.

#### Response 54

1. The Draft EIS/EIR did not discuss in detail the presence of interbedded sediments or pyroclastic units, which are known to exist within the lower Miocene volcanic sequence. They consist of very fine to coarse grained volcanoclastic and arkosic siltstone, sandstone, and conglomerate. The section is about 600 feet thick and represents about 1/5 of the entire sequence. Where mapped at the surface, the clastic unit lies outside of the Lanfair Valley area. Minor amounts of sediment do exist within younger volcanic units and consist of thin beds of sandstone and siltstone, plus pyroclastic deposits.
2. An excellent location to characterize the interbedded non-volcanic rocks is within Piute Gorge. Roughly 80 percent of the rock exposed consists of very fractured, slightly weathered, brittle andesitic flows. The remaining 20 percent consists of thick, discontinuous beds of agglomerate (breccias) and sandstone that are intensely weathered, massive, and not fractured. Direct observation indicates that the volcanic flows have a considerably higher hydraulic conductivity through open fractures than do the weathered, unfractured clastic materials.
3. As derived from aquifer tests, the hydraulic conductivity for the Miocene volcanics ranges from  $3.9 \times 10^{-4}$  to  $4.5 \times 10^{-5}$  cm/sec, as stated in the Draft EIS/EIR (page 4.3-14). The lower permeability of the volcanics compared to the alluvium may be due to the presence of the interbedded, non-fractured sediments and volcanoclastics.

#### Comment 55

1. That the "chain" of bedrock exposures between Castle Mountains and the Bobcat Hills (page 4.3-8) is not a "buried ridge of bedrock" could have been assessed, and shown to be false, on the basis of modern aeromagnetic maps of the area. The speculation that if it existed, such a ridge could form a groundwater barrier between the West Well Field and Piute Spring, again reveals the naive view of stratigraphy and structure of the Tertiary rocks held by the Draft EIS/EIR authors. Not only that, the speculation is contradicted by the statement (page 4.3-19) that ground water flow beneath Lanfair Valley is toward the east because of the



difference in elevation of Lanfair and Piute Valleys even though the Piute Range intervenes (that is, the ground water systems of the two valleys must be connected according to the Draft EIS/EIR, and the water flow through the Piute Range).

#### Response 55

1. An aeromagnetic map presented by the Commenter was superimposed on the geologic map of Lanfair Valley after Jennings (1961). Presumably the Commenter is suggesting that volcanic rocks should have a high magnetic susceptibility (i.e., high in magnetite or iron). The presence of a high magnetic susceptibility should produce positive anomalies. Conversely, non-iron bearing rock should produce negative anomalies. Based on this scenario, we fail to note any substantial correlation between known volcanic exposures and positive magnetic highs in the Lanfair Valley region. For example, within the Castle Mountain, northern Piute Range, and Hackberry Mountain areas, negative anomalies are shown which should be high due to the presence of volcanic rocks. Strangely, there is a positive anomaly within the south/central part of the alluviated Lanfair Valley just southeast of Lanfair Buttes. This could represent part of the buried ridge discussed in the Draft EIS/EIR.
2. It was the opinion of the geologic team that the aeromagnetic map (Youngs, 1987) of the Lanfair Valley area did not portray with consistency the known distribution of rock types or known structures. The inconsistencies were attributed to a wide spacing between flight lines.
3. The gravity data (Oliver *et al.*, 1980) show a low relief gradient to the northwest into Ivanpah Valley. In a subdued way, there is a mild but persistent gradient across Lanfair Valley. This anomaly coincides with the inferred buried ridge discussed in the Draft EIS/EIR. Regardless of the buried ridge, this postulated bedrock high was eliminated in the hydrogeologic model for the sake of modeling "worst case" impacts on Piute Spring. If the buried ridge exists, it would have the tendency to impede the flow of ground water from the West Well Field to Piute Spring. See also Response Nos. 02 and 52.

#### Comment 56

1. The statement (page 4.3-19) that Piute Spring occurs at the surface intersection (in Piute Gorge) and the Piute Valley water table is unsupportable, and is finally contradicted on page 4.3-26 where it is correctly stated that Piute Spring is fed by Lanfair Valley ground water. Geologic reconstructions beneath Lanfair Valley, based on the available modern geologic and geophysical information, show that the West Well Field is directly connected to the water supply for Piute Spring.



Response 56

1. The concern is not clear. The statement made in the Draft EIS/EIR (page 4.3-19 [first paragraph, second bullet]), does not contradict the statement on page 4.3-26 (first paragraph). Ground water flowing from Lanfair Valley via Piute Gorge locally surfaces at Piute Spring. The issuing spring represents a window, or top of the water table, that exists between Lanfair and Piute Valleys. There is a hydrologic gradient between the two valleys. The spring lies along the top of the gradient (water table). Water issuing from the spring area enters the alluvium downgradient in the gorge and eventually the alluvial fill in Piute Valley. Based on this concept, there is direct hydrologic continuity between the two valleys; nothing else is inferred.
2. To the extent that the Commenter's statement that the ground water at the West Well Field is "directly connected to water supply for Piute Spring" means that Piute Spring flow comes from the Lanfair Valley aquifer, we concur. The Draft EIS/EIR hydrogeologic model is based on this concept. However, the geophysical information (aeromagnetics) does not support any specific inferred pathway for ground water directly from the West Well Field to the Piute Spring area. If one were to draw a magnetic profile from Piute Spring to the West Well Field, a magnetic high (ridge) would be apparent, suggesting that the two are not directly connected.

Comment 57

1. As with the Tertiary volcanic sections, the Quaternary alluvial units are lumped as though they were a single unit. In fact, at least seven mappable Quaternary units exist, which have different geomorphic characteristics, and no doubt different soil and other surface characteristics. These, along with variable stratigraphic characteristics, will affect infiltration and transmission of ground water. Thus, all of the computations based on transmissibilities of ground water in Quaternary and Tertiary rocks are faulty and cannot be used to predict the effects of ground water withdrawal from West Well Field on Piute Spring.

Response 57

1. It is recognized that there are more than seven Quaternary units within Lanfair Valley. The alluvial units are extremely variable in their percentages of gravel, sand, silt, and clay and in their degree of weathering, consolidation, porosity, permeability, etc. Not only do these units vary laterally over short distance, they also vary in thickness. To subdivide the Quaternary sequence into even three distinct deposits, and have confidence that the deposits exist as

shown on a map, would take a considerable amount of subsurface exploration, due to the size of the valley. To fully delineate all of the alluvial units would require drilling literally hundreds of holes up to 1,000 feet deep throughout the valley.

2. Ground water studies in the Great Basin, without exception, must synthesize the numerous alluvial parameters into a single unit or perhaps two: (1) younger alluvium, and (2) older alluvium. In Lanfair Valley, there are younger alluvial units which lie within the active stream drainages and are generally thin throughout most of the valley. The ground water regime lies in part within the unconsolidated or semi-consolidated older alluvial zone. Ground water also has saturated the underlying bedrock.
3. The hydrologic parameters (permeabilities) shown in the Draft EIS/EIR (page 4.3-14) were calculated from aquifer tests conducted by the Mark Group (1988). Aquifer testing is considered the most acceptable method to obtain hydrologic parameters. The permeabilities shown are considered characteristic of the West Well Field area. The permeabilities and porosities reported by the Mark Group fall into a category of deposits ranging from clean sands and gravels to very fine sands with some silt and clay. These data coincide with the logged lithologies from the wells drilled. In addition, the parameters stated in the Draft EIS/EIR are not out of line with the parameters developed for other basin studies in the Mojave Desert (Department of Water Resources, 1979 [Bulletin 91-24]).

#### Comment 58

1. Although the geology described in the DEIS is demonstrably wrong, the kinds of information on which ground water flow and alluvium/bedrock hydraulic conductivities are based cannot be assessed because the data are not reported. No indication at all is given of the manner in which the Mark Group conducted their investigations, or of the number or type of samples used to determine hydraulic conductivity/porosity measurements. For all the reader knows, the ranges quoted on page 5.3-14 are for two samples each of "unconsolidated sediment" and "volcanic rock."

#### Response 58

1. The Draft EIS/EIR was submitted for the prime purpose of characterization, detecting potential impacts, and, if necessary mitigation. The background data were not presented, nor is such information customarily included in an EIS/EIR. However, the references as stated in the Draft EIS/EIR (Chapter 13.0) provide technical background information that will be helpful to the more inquisitive reader. The referenced information is readily available at offices of the



BLM and County listed in the Draft EIS/EIR. In particular, reference is made to the Mark Group report (1988) listed in the Draft EIS/EIR. Copies of these documents were furnished to the SCLDF at the time of Draft EIS/EIR distribution.

#### Comment 59

1. The stratigraphy, structure, and physical characteristics of the Quaternary and Tertiary rocks in this area are complex, but the DEIS glosses over the complexities with unsupportable generalizations, idle speculations that are contradicted by existing reports and information, and errors of interpretation that are internally contradicted in the DEIS itself. In all, the public can have no confidence in the quality of the assessment, the predicted consequences of the project, or the likely performance of any applicant following its guidelines.

#### Response 59

1. The Draft EIS/EIR is intended for the layman and expert alike, to read and understand what potential impacts the project may have on the environment (40 CFR Section 1502.8, and CEQA Guidelines, Section 15140). Enough information was included in the document to characterize the project site area. Particular emphasis was directed toward the hydrogeologic issues of mining ground water and the possibility of depleting flow at Piute Spring. Modeling was deliberately biased to be conservative with regard to the amount of water which enters and leaves the Lanfair Basin, its pathway, and its effect on Piute Spring.
2. The Commenter has raised a number of issues that have no direct relationship to the potential impacts and/or can be answered by reading the referenced material or the Draft EIS/EIR. Claims of "contradiction," "unsupportable generalization," "idle speculation," and "errors of interpretations," do not provide the basis for a meaningful technical interchange.



**LETTER 9: SIERRA CLUB, MOJAVE GROUP****Comment 01**

1. It is outrageous that a foreign firm can strip mine our desert, leave behind hazardous waste and four square miles of torn up desert, rob the desert of billions of gallons of water, take the resources of the people of the United States, and pay absolutely no fees for robbing us like this.

**Response 01**

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR.
2. Viceroy Gold Corporation (the Applicant) is incorporated in the State of Delaware and is authorized to do business in California and Nevada.

**Comment 02**

1. The Environmental Impact Statement leaves some very important safety points unresolved.
2. Background: As much as 3,000 tons of cyanide would be used at the mine each year. They will be pouring this toxic chemical into heaped-up pads of dirt and rock. What happens to this vast pile of chemical-laced dirt once the company quits operations? A Federal court in the nation's capital just ruled that this residue should be classified as hazardous waste. We will be left with a 1/2-square mile accumulation of toxic material piled about 30 feet high throughout. Further, if cyanide in this heap comes in contact with acids, it becomes very deadly hydrogen cyanide gas.
3. A high official of the Environmental Protection Agency told me that he views mine operations such as this one as potential Superfund sites. Imagine that! A Superfund site in the nation's first Scenic Area. The Canadians get the gold and profits. We get a possible Superfund site.

**Response 02**

1. The Draft EIS/EIR addressed health and safety in Section 5.7 (Environmental Health and Safety). It explained that when the operation is complete, the RWQCB will regulate decommissioning of the heap leach operation.
2. The Commenter is in error regarding classification of heap leach ore as "hazardous waste." Spent leach ore from the precious metals industry is considered by the EPA to be a waste from

the "beneficiation of ores and minerals" and is therefore subject to the temporary exclusion from coverage by the hazardous waste regulations found at 40 CFR 261.4 (b)(7). The regulation of such waste is the subject of ongoing rulemaking by the EPA under Subtitle D of the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6941 *et seq.*), the non-hazardous waste provisions.

#### Comment 03

1. What happens if we get a strong acid rain on the heap leach pads? Will the entire pile start oozing hydrogen cyanide gas? Will control procedures for hydrogen cyanide prove effective in a desert downpour?

#### Response 03

1. Acid rain is primarily attributed to heavy industrial emissions from use of sulfur-containing fuels (such as coal). This is not a recognized problem in the Mojave Desert and inapplicable to the Proposed Action.
2. Control procedures for hydrogen cyanide in a heavy precipitation event would be unnecessary as the alkalinity of the ore being leached would maintain the pH at a sufficiently high level to prevent a problem with hydrogen cyanide. Hydrogen cyanide concentrations at the heap leach pads would be regularly monitored as required by MSHA.

#### Comment 04

1. Since a Federal Court has already ruled that these piles remain hazardous even after mining operations finish, will this be a danger long after the mining company has moved on? The company will be monitoring this situation while it is extracting minerals. Are they willing to maintain inspections for as long as the pile remains toxic, or will the U.S. taxpayers be picking up this expense?
2. This is an important question. Heavy metals are known to concentrate in leached ore piles. Erosion could naturally expose them after many years. Even after the heap is rinsed to reduce residual cyanide content to the level stipulated by the Regional Water Quality Control Board, there is reason to fear that the pile will still be hazardous. The discussion in 5.7.1.2 does not allay my fears about heavy metals, nor apparently, the fears of the Federal court.



Response 04

1. See Response No. 02. No Federal court has ruled that spent ore on the heap leach pads will be hazardous. The bond required by the RWQCB will assure proper decommissioning after completion of the heap leach operation.
2. The Commenter is referred to the Draft EIS/EIR (Table 5.3.1, Summary of Results, Analysis of Ore, Protore and Overburden) in response to concerns about heavy metals. The table demonstrates that such constituents are below State of California Code of Regulations Title 22, Soluble Threshold Limits of Concentration for Hazardous Wastes (22 CCR §§ 66206 and 66700).

Comment 05

1. Again, what kind of long-term monitoring and payments will the Canadian company be liable for? And even more basic, why should American soil be polluted and the American public put at risk so that some foreign firm can rob us of millions of dollars?

Response 05

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of approval.
2. Bonding will assure reclamation of the site once the project is completed. During the monitoring of project operations, monitoring will be completed in accordance with the Mitigation Monitoring Program (see Supplement, Appendix E).
3. See Section 4.1.8 (Socioeconomics) of this Final EIS/EIR for a discussion of mining royalties.

Comment 06

1. Strong acids are typically used in this type of mining to regenerate the absorption medium. What safeguards will be taken to insure beyond doubt that over the long life of this project, such potent acids won't come into contact with the sodium cyanide solution? Safety plans on this matter are left somewhat nebulous. They are left to the future to decide. I don't understand why these are not stated in the text of the EIS. What safeguards are being built in *before* the government regulators come on site? Surely, if the company is so concerned about safety, these items should already have been considered. Or will there be only grudging acceptance of government regulations?



Response 06

1. Storage and use of chemicals is regulated by the MSHA (30 U.S.C. § 801 *et seq.*), as stated in the Draft EIS/EIR (page 5.7-1). Standards controlling storage and use are implemented at each mining operation. The Applicant will be required to comply with applicable laws, including separate storage of cyanide and acid.

Comment 07

1. The EIS flatly states that "The leaching operations associated with the proposed action could result in emissions of hydrogen cyanide (HCN) gas." It then goes on to talk about continuous pH control of the leaching solution. But what happens when something goes seriously wrong?
2. In the case of the oil spill in Alaska, at Three Mile Island, at Bhopal, and the like, we've all seen how much vaunted safety features can fail. What happens then? Are there emergency evacuation procedures? What happens to wildlife in the area in the case of catastrophe? Who is responsible for cleanup? What kind of public warning will be given? How will it be given? Who pays if there is a major disaster? Will U.S. taxpayers pick up the bill?

Response 07

1. The heap leach process to be used at the Castle Mountain Project does not have the potential to create large scale environmental disasters such as those referenced by the Commenter. The Draft EIS/EIR analyses have been based upon the reasonably foreseeable consequences of this specific operation, as supported by credible scientific evidence.

Comment 08

1. A lot of space is given to the proper training of company employees. They will drive slow, they will be trained to handle toxic chemical spills, they will be drilled in safety procedures.
2. As the captain on the Exxon Valdez proved, it takes only one alcoholic to mess up the best laid plans. What specific company standards are there concerning alcohol and drug abuse? Will there be random testing? Testing with cause? What about the employee who shows up groggy on Monday morning? Will there be immediate suspension for a week if someone drives too fast? What will happen to employees who speed home on a Friday night? Will drivers of materials be paid by the hour which would encourage speeding?

Response 08

1. The Applicant will be required to comply with each of the project mitigation measures adopted as Conditions of Approval. The Mitigation Compliance Program (see Supplement, Appendix E) required for this project by the BLM and County will ensure that these specifications are followed.
2. The Applicant has indicated that it will require all personnel under consideration for employment to undergo a pre-employment medical examination. The examination will include testing for evidence of drug use. Employees reporting to work under the influence of alcohol or drugs will be removed from the project site and be subject to disciplinary action, which could result in termination of employment. Employees involved in accidents on the project site involving bodily injury or property damage will be subject to testing for alcohol and drugs. Positive test results would lead to disciplinary action.

Comment 09

1. Considering the inadequacy of the EIS and the long-term hazards that this project imposes, it is quite clear that the No Action Alternative is in the best interests of the people of the United States.

Response 09

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR.

## LETTER 10: SOCIETY FOR THE CONSERVATION OF BIGHORN SHEEP

Comment 01

1. The Draft EIS/EIR proposes that a reclamation plan be implemented to accelerate the recovery of most areas that would be disturbed by this project. I have no doubt that revegetation will be successful on most disturbed sites. The vegetation that has reestablished itself on the embankments of the abandoned Barnwell to Searchlight railroad demonstrates that successful revegetation will occur in this area. The density and diversity of vegetation on such embankments is virtually indistinguishable from adjacent, undisturbed areas. The requirement that test plots be established early in the mine's life will enhance the effectiveness of revegetation efforts at the site, and will accelerate the rate of recovery to predisturbance levels.

Response 01

1. Comment noted.

Comment 02

1. Mining will cause a temporary loss of a very small portion of the available wildlife habitat in Lanfair Valley until disturbed areas have been revegetated, and the open pits could represent a permanent loss of a smaller area for some wildlife species. However, based upon my personal observations of the pits at Kaiser Steel's iron mine, I would expect that the pits at Castle Mountain will be utilized as habitat by bighorn sheep after mining operations cease. Owing to the very low levels of heavy metals in the wall rock of the Castle Mountain pits, surface run off which enters the pits will be safe for wildlife to drink, and over time, some vegetation will reestablish on the benches and floor of the pits.

Response 02

1. Comment noted.

Comment 03

1. From the perspective of minimizing impacts to desert tortoise, it appears that commuter traffic should be directed along the Searchlight Access Route, which will pass through a much shorter length of crucial tortoise habitat, with tortoise densities that are about one-fifth the densities in the center of Ivanpah Valley. Fencing along the Access Roads should be restricted to minimize interference with the movement of bighorn sheep. Given that the commuter traffic will be concentrated around the hours of shift changes, I do not expect it will interfere with bighorn migration patterns.



Response 03

1. Comment noted.

Comment 04

1. The conclusion that ground water withdrawals for the Castle Mountain Project will not interfere with the natural flow at Piute Spring appears reasonable. I note that monitor wells around the proposed well field will be used to assess the accuracy of the computer modeling which supports that conclusion. I believe, however, that the Final EIS/EIR should discuss what will occur if the monitor wells show a greater-than-expected drawdown. Could water be developed from a different aquifer if excessive drawdown were to occur? Where would that be, and how long would it take to bring it into service?

Response 04

1. The analysis completed and shown in the Draft EIS/EIR (Section 5.3, Water Resources), indicates that no effect on stream flow at Piute Spring is expected. A ground water monitoring and contingency plan has been developed and is summarized in Section 4.1.5 (Water Resources) of this Final EIS/EIR. The plan is on file and available for public review at locations shown in the User's Guide of this Final EIS/EIR.

Comment 05

1. In general, the springs throughout the area provide an adequate supply of water for the wildlife population. The Draft EIS/EIR states that the project sponsor will pay for the removal and relocation of two wildlife watering guzzlers. Improvements that were made some time ago in the vicinity of Dove Springs are in need of repair. Perhaps this could be done by the project sponsor concurrently with its other changes to water sources. The measures proposed in the Draft EIS/EIR to prevent wildlife from coming into contact with water containing cyanide leaching chemicals use procedures that are effective at other heap leach operations.

Response 05

1. As discussed in the Draft EIS/EIR (Section 5.5, Wildlife), no significant effect to bighorn sheep populations is expected as a result of the Proposed Action.

## LETTER 11: THE WILDERNESS SOCIETY AND NATURAL RESOURCES DEFENSE COUNCIL

Comment 01

1. TWS and NRDC believe that the Draft EIS/EIR is fundamentally inadequate to meet NEPA and CEQA requirements. We also believe that the Draft EIS/EIR fails to demonstrate that reclamation of the site will be successful as required by SMARA. On the contrary, the Draft EIS/EIR reveals, despite its inadequacies, that the proposed project is virtually certain to result in widespread and significant adverse impacts. It also reveals that the proposed reclamation will be unsuccessful in reclaiming the site for post-mining uses, which should include -- among other possible uses -- wildlife habitat, recreation, grazing, preservation of rare plant communities, and enjoyment of the area's scenic values. Under the circumstances we have no other alternative but to oppose the project.
2. TWS and NRDC recognize that there are many critical flaws and omissions in the technical information and analyses contained in the document. We hereby endorse and incorporate herein by reference the comments of Desert Survivors, Sierra Club Legal Defense Fund, Dr. Robert Stebbins, Dr. Robert Curry, Dr. Howard Wilshire, and Dr. Bruce M. Pavlick.

Response 01

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval.
2. See specific responses to comments below addressing opinions on Draft EIS/EIR adequacy.
3. See responses to comments to Desert Survivors, Sierra Club Legal Defense Fund, Dr. Robert Stebbins, Dr. Robert Curry, Dr. Howard Wilshire, and Dr. Bruce M. Pavlick in their respective sections of this Final EIS/EIR.

Comment 02

1. The Draft EIS/EIR purports to analyze three alternatives, but in fact considers only two: "no action" and the "Proposed Action" alternative. The remaining alternative is more accurately described as a variation of the proposed project with a mitigation measure imposed. Clearly, mitigation measures are not interchangeable with alternatives, particularly under CEQA. See Cal. Admin. Code Secs. 15143(c) and (d).



2. Because the Ivanpah Access Route Alternative really constitutes the proposed action with one additional mitigation measure rather than an alternative, and thus only the no action and proposed action alternatives are considered, the Draft EIS/EIR fails to comply with CEQA's and NEPA's mandates to consider a meaningful range of alternatives. *See California v. Bergland, supra*; Cal. Admin. Code Sec. 15143(d). Indeed, except for the "no action" alternative, the proposed "alternatives" have nearly identical environmental impacts. The only difference is that one access route rather than two would be utilized in the Ivanpah Access Route Alternative.

#### Response 02

1. According to Federal regulations, the alternatives section "should present the environmental impacts of the proposal and the alternatives in comparative form, thus *sharply defining the issues and providing a clear basis for choice among options* by the decision maker and the public" 40 CFR Sec. 1502.14 (emphasis added). The CEQA guidelines explain that "the discussion alternatives shall focus on *alternatives capable of eliminating any significant adverse environmental effects* or reducing them to a level of insignificance..." (14 CCR § 15126) (emphasize added). The Draft EIS/EIR reviews a range of alternatives designed in accordance with these regulations. Moreover, the range of alternatives considered is consistent with requirements that alternatives be "feasible," "viable," and "practicable."
2. As explained in the Draft EIS/EIR (Section 2.2.1, Bureau of Land Management) the BLM's primary discretionary actions for the Castle Mountain Project involve rights-of-way authorizations for utility corridors outside of the area of operation. The Draft EIS/EIR explains in Sections 3.2.5 (Utilities, Ancillary Structures, Equipment, and Supplies) that rights-of-way authorizations will be required for project access for transport of water and natural gas, in accordance with Title V of FLPMA (43 U.S.C. § 1761 *et seq.*). The Draft EIS/EIR inadvertently stated that the project access roads required Title V permits; that statement was incorrect.
3. The Ivanpah Access Alternative was formulated following initial discussions between the BLM Needles Resource Area and Stateline Resource Area offices, and in response to concerns expressed during the Public Scoping Process about potential impacts to the Piute Valley desert tortoise population. Comments from The Wilderness Society on this issue were also received in response to the Notice of Preparation that indicated that this alternative should be addressed (see Robert Stebbins' comments to The Wilderness Society, Draft EIS/EIR Appendix C).



4. As shown in the Draft EIS/EIR (Figure 4.5.1, Desert Tortoise Habitat and Proposed Access Roads), large desert tortoise populations occur in the Ivanpah and Piute Valleys, along both of the access routes. The Piute Valley population has been declining in recent years. The Ivanpah Access Route Alternative was therefore evaluated in the Draft EIS/EIR as an alternate method of reducing or eliminating potential effects to this wildlife resource, in compliance with the environmental regulations. Additional alternatives were evaluated in the Supplement.
5. The Commenter's conclusion that the environmental impacts associated with these alternatives were nearly identical is correct; similar environmental concerns were identified and appropriate mitigation measures were suggested to reduce potential impacts of both alternatives to levels below significance. This is an important conclusion, since the regulatory requirement to set forth project alternatives is so that significant environmental damage can be avoided where feasible. EIRs must produce information sufficient to permit a reasonable choice among alternatives with respect to environmental effects. Since the environmental impacts of both the Proposed Action and its alternative can be mitigated below a level of significance or avoided, the objective for addressing alternatives has been fulfilled and environmental regulations have been satisfied.
6. The Commenter is referred to the Supplement (Chapter 4.0, Alternatives to the Proposed Action) for a discussion of additional alternatives that were prepared in response to public comment on the Draft EIS/EIR.

#### Comment 03

1. In effect, the Draft EIS/EIR assumes that Castle Mountain's mineral resources will be developed, instead of exploring alternative methods of obtaining gold, the need for this project, the benefits of a smaller operation, or the value of this one project to the economy or national security. The narrow range of "alternatives" considered in the Draft EIS/EIR clearly shows that the BLM and San Bernardino County have failed to take the "hard look" at the proposed project which NEPA and CEQA require. *NRDC v. Bergland*, *supra* 483 F. Supp. at 483.
2. The Draft EIS/EIR ignores alternatives to any mining of the deposit. The purpose of mining the deposit is described as follows:

- "The Castle Mountain Project is proposed as a private industry undertaking. Federal Government policies encourage private enterprise in the economic development of domestic mineral resources to help assure satisfaction of the nation's industrial and security needs" (page 3.2-1).
3. There is nothing in the Draft EIS/EIR to substantiate the implied claim that this particular mining venture is necessary to help satisfy the "nation's industrial and national security needs." Even assuming gold satisfies either of these needs, the Draft EIS/EIR should have considered alternative methods and sources of obtaining this metal as well as examined the benefits, if any, to the nation's security of this one gold mine in comparison to its impact on the values of a national scenic area.
  4. Another alternative method of assuring adequate supplies of this mineral which the Draft EIS/EIR ignores is to restrict their non-military uses and/or require adequate stockpiling to mitigate the effects of a supply interruption. The fact that implementation of such options is beyond the agency's control does not make it inappropriate for consideration. See, e.g., *Sierra Club v. Lynn*, 502 F.2d 43 (5th Cir. 1974); *EDF v. Corps of Engineers*, 492 F.2d 1123 (5th Cir. 1974) (both requiring consideration of alternatives beyond the agency's control).
  5. It is not the function of the agencies preparing the Draft EIS/EIR to assure Viceroy the highest return on its investment. Rather, their function is to "identify ways that environmental damage can be avoided or significantly reduced." Cal. Admin. Code Sec 15006(2). The State EIR Guidelines, in particular, make it clear that an alternative may not be rejected because it reduces the Applicant's profit margin: they require that the discussion of alternatives must focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would be costly or impede the project's objectives. Cal. Admin. Code Sec 15126(d)(3).

### Response 03

1. The Draft EIS/EIR necessarily assumes development of the Castle Mountain mineral resources in order to identify and evaluate the full range of environmental impacts that could be realized. In response to the Commenter's assertion that the Draft EIS/EIR reviewed a "narrow range" of alternatives, the Commenter is referred to the Draft EIS/EIR (Sections 3.3, Alternatives Eliminated from Detailed Consideration and 3.4, Alternatives to the Proposed Action). Over 15 different alternatives were evaluated during the course of these analyses, including alternative mining and processing technologies, alternative locations for project facilities,



alternative water supply, and alternative power supply, in addition to the alternatives for access. The majority of these alternatives were determined as a result of the analysis to be not feasible or inappropriate for the reasons stated therein. The analysis therefore fulfills the intent of both NEPA and CEQA that a reasonable range of alternatives be considered and that a "hard look" be taken.

2. Determination of the public need for this project and its value to the economy or national security is not within the scope of, or consistent with the purposes of, an EIS under NEPA or an EIR under CEQA. That determination is related to the planning and approval process which is the prerogative of the decision-making body and its sovereignty, in light of the environmental consequences of its decision.
3. The purpose of the Castle Mountain Project is not as stated by the Commenter. The Commenter is referred to the paragraph proceeding the one cited on page 3.2-1, which states:
  - *"The objective of the proposed project is to develop a commercial open pit mine using conventional heap leach processing to recover gold in a disseminated orebody. The ore would be processed at a rate of about three million tons per year"* (emphasis added).

The purpose of the Proposed Action is, therefore, development of the Castle Mountain orebody as a private industry undertaking, not to obtain gold for industrial and national security needs. That Federal Government policies encourage such development is supportive of this objective, but it is not a requirement.

4. The CEQA Guidelines state that a range of reasonable alternatives should be described "which could feasibly attain the basic objectives of the project" (14 CCR § 15126(d)). The alternatives of restricting non-military uses of gold and/or requiring stockpiling to assure adequate supplies are not in conformance with the stated objectives of the project and therefore would not meet the requirements of CEQA. Further, CEQA provides that "an EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (CEQA Guidelines, Section 15126, Subd. (d)(5)). Approval of an alternative to reduce natural consumption of this resource is not considered a reasonable alternative and would be highly speculative. However, to address the Commenter's requests, additional analysis of alternative methods to acquire gold was included in the Supplement (Section 4.5.4, Alternative Methods of Acquiring Gold).



5. The Commenter is in error in assuming that the Applicant's profitability had any bearing on the Draft EIS/EIR analyses. In the process of determining feasible alternatives to the Proposed Action, the fact that a particular alternative would be more expensive or less profitable was irrelevant. The Commenter is referred to the Draft EIS/EIR (Section 3.3, Alternatives Eliminated from Detailed Consideration) for a discussion of the rationale for determining the appropriateness of each alternative.
6. The Commenter's request for an alternative evaluating the "benefits of a smaller operation" has been satisfied in the Supplement (Section 4.3.1, Reduced Project Alternative).

#### Comment 04

1. The Draft EIS/EIR's analysis reflects the view that not only will Castle Mountain be mined, but also that it will be mined in a manner acceptable to Viceroy. In its discussion of "Issues to be Resolved," the Draft EIS/EIR states, "[t]he primary issue to be resolved is the choice among two alternatives for right-of-way" (page 1.1-3). This also is reflected by the narrow range of "alternatives" considered (as discussed above), and by the fact that the Draft EIS/EIR improperly rejects some genuine alternatives (as opposed to mitigation measures) to the proposed action and entirely fails to mention others, in violation of both NEPA, 40 CFR Sec. 1502.14, and the CEQA guidelines.
2. The Draft EIS/EIR mentioned and rejects the alternatives of locating all or a portion of the processing facilities outside of the project site. Relocating the overburden, leach piles, and processing facilities outside of the National Scenic Area would clearly affect the project's impacts to the Scenic Area.

#### Response 04

1. The CEQA Guidelines require that the summary include a statement on the "Issues to be resolved, including the choice among alternatives and whether or how to mitigate the significant effects" (14 CCR § 15123(b)(3)). As discussed above in Response No. 01, the Ivanpah Access Alternative was developed as an alternate method to reduce or eliminate potential effects to the desert tortoise. It was determined that this was the primary issue to be resolved based upon the public concerns regarding access, and the BLM's options for choice among access alternatives. The Commenter does not offer an opinion on other issues to be resolved.

2. Regarding the range of alternatives considered, see Response No. 02. The Draft EIS/EIR (page 3.3-7) explained that location of the overburden piles, heap leach pads, and processing facilities offsite would be expected to increase pollutant emissions (hydrocarbons and dust) while still requiring a comparable area of land. Since the Proposed Action would be in conformance with the EMNSA Plan as stated in the Draft EIS/EIR (Sections 5.10, Land Use and 5.8, Visual Resources), there were no other apparent environmental reasons to consider location of facilities outside of the EMNSA.

#### Comment 05

1. The Draft EIS/EIR also ignores the alternatives of withdrawal, condemnation and delay of the mining project. The former two options would permit the environment of the affected area to be protected fully. *See NRDC v. Berklund*, 458 F. Supp. 925 (D.D.C. 1978), *aff'd*, 609 F. 2d 553 (D.C. Cir. 1979). Delay of the project could allow time for development of a reclamation plan that is technologically and economically feasible, thereby avoiding potentially irreversible damage. It would also allow time to obtain information about several critically important environmental consequences which the Draft EIS/EIR ignores or about which it defers analysis. For instance, delay would allow time to conduct the reclamation research recognized as necessary by the Draft EIS/EIR.

#### Response 05

1. The Draft EIS/EIR did not specifically identify the requested "alternatives" of withdrawal, condemnation, or delay of the mining project. It is questionable whether mechanisms for such denial of the "right to mine" or a delayed approval exist without constituting an inverse condemnation. However, from an environmental standpoint, the Draft EIS/EIR does provide the BLM and County with an assessment of the comparative impacts of these "alternatives" through the No Action Alternative. Since a decision to withdraw, condemn, or delay the project would eliminate or defer the potential project impacts, the No Action Alternative, as described in Section 3.4.2 and evaluated throughout the text of the Draft EIS/EIR encompasses the Commenter's suggestion. Nevertheless, the Supplement addressed the Commenter's request for a discussion of withdrawal considerations in Section 4.5.3 (Site Withdrawal or Condemnation).
2. Regarding reclamation research, see Response No. 11.



Comment 06

1. Delay could also help avoid conflicts with potential wilderness areas and national parks. The Viceroy claims within the defined project area and those reaching beyond are primarily located within a proposed national park and adjacent to, and apparently within, Wilderness Study Areas. (The WSAs are protected from any mining activity that would impact their wilderness values, unless the claims are pre-FLPMA.) This area has long been recognized for the significant value of the resources in and around the project site. The National Park Service has recognized the area as warranting national park status and protection, because of the many values in the area. The Bureau of Land Management currently manages the area as part of the East Mojave National Scenic Area and under the limited use class provision of the California Desert Management Plan so as to "protect the area's outstanding natural, scenic and cultural resources." All of these designations and proposals were initiated because of the tremendous natural, cultural, scenic, and recreational values of the East Mojave National Scenic Area where the project mine is located. Legislation is currently pending before the United States Congress that would designate the project area a national park and adjacent lands as wilderness. It is not possible to tell from the information presented in the Draft EIS/EIR what the nature and extent of such conflicts between the project and park or wilderness designations might be. In any event, consideration of at least one alternative which preserves wilderness and park values pending Congressional designation is clearly required. Scoping comments of TWS specifically pointed out the existence of the national park and wilderness proposal, yet the Draft EIS/EIR fails to address this important concern.

Response 06

1. Viceroy's mining claims that extend beyond the defined project site are not a part of the Castle Mountain Project and should not be construed as such. No portion of the Castle Mountain Project, or either of the proposed access routes, lies within a WSA.
2. The Commenter's assertion that "The National Park Service has recognized the area as warranting national park status and protection, because of the many values in the area," is not reflected in recent correspondence on this issue. The National Park Service recently responded to a request by Congressman Jerry Lewis to review H.R. 780, the proposed "California Desert Protection Act of 1989." In its response, the National Park Service stated:
  - "The National Park Service (NPS) and the Administration are strongly opposed to enactment of H.R. 780. The bill would, among other provisions, designate vast unsuitable areas of southern California as new wilderness, unnecessarily expand the National Park System, and require acquisition of expensive lands now owned by Indian allottees near Palm



Springs. H.R. 780 would designate 4.5 million acres as wilderness, add 245,000 acres to the Joshua Tree National Monument, designate 1.5 million acres as a new Mojave National Park, and establish Death Valley and Joshua Tree National Monuments as National Parks."

- "H.R. 780, if enacted, would override 13 years of work by citizens and interest groups who joined together in the belief that, by Congressional direction, they were given the responsibility to develop a Desert Plan which would provide balanced management for all resources within the desert. The Desert Plan provides a process which allows for continued public input and dialogue on the Plan. This process has afforded the public an excellent opportunity to review planning decisions by which the desert lands are managed and for what uses. H.R. 780 would ignore this process and instead propose boundary enlargement of NPS lands and adjustments to BLM lands that do not reflect sound on-the-ground management."
- "We understand that you are particularly concerned with sections 401 through 406 of H.R. 780, which would establish the 1.5 million-acre Mojave National Park. This would require the transfer of 1.29 million acres of public lands from BLM to NPS and would abolish the present East Mojave National Scenic Area administered by BLM. We concurred in the scenic area designation, because the area did not have the qualities needed to designate it as a national park and also because it contained many uses incompatible with a national park, such as interstate pipelines, powerlines, and a railroad. Consequently, we object to a proposal for a major new national park that does not meet the standards established for new NPS areas."
- "The national park status H.R. 780 would give considerable additional Federal costs with little real benefit to the resource" (NPS, 1990).

The NPS has not indicated any particular concern or land use conflict in their review and comment of the Castle Mountain Project Draft EIS/EIR (see Section 4.2.1.1, Letter 5: U.S. Department of Interior, National Park Service, of this Final EIS/EIR). The BLM will continue to manage the EMNSA under the framework of public land laws and regulations contained in Title 43 of the CFR, and in conformance with the adopted *East Mojave National Scenic Area Management Plan* (BLM, 1988a). WSAs will continue to be managed in accordance with the BLM's *Interim Management Policy and Guidelines for Lands Under Wilderness Review* (BLM, 1987) until Congress takes action on the various forms of legislation proposed for these areas.

3. In the preparation of the Draft EIS/EIR, BLM recognized that the "California Desert Protection Act of 1986" has been reintroduced to the 100th Congress as S11. However, the Commenter's opinion that "consideration of at least one alternative which preserves wilderness and park values pending congressional designation is clearly required" is not consistent with NEPA or CEQA requirements. At this time, such legislation, which would

require significant legislative changes, is considered to be in its formative stage. In the event that legislation of some kind is enacted, its final form could be substantially different than that originally proposed. As such, there is no indication as to the specific effect of future legislation on the EMNSA. This is further evidenced by legislation recently introduced by Congressman Lewis (H.R. 3460), which differs substantially from S11, and by the fact that Senator Wilson has not supported S11. The outcome of this legislation is thus considered uncertain and speculative. An attempt to address a current project in this speculative context would provide little useful information.

4. From a perspective of potential environmental consequences, the No Action Alternative addressed in the Draft EIS/EIR encompasses the alternative requested by the Commenter.

#### Comment 07

1. Finally, alternatives to the use of cyanide for extraction of the gold were not considered. A July 1988 study commissioned by the California State Legislature and prepared by the Mining Waste Study Team of the University of California at Berkeley contained the following statement:
  - "Because cyanide is widely used and because it is extremely toxic, there is concern that accidental contamination of ground and surface waters could threaten public health. Because of this perceived threat, some mining operations in the state have been prevented from using cyanide in their operations. Instead, these mines employ thiourea which, although listed as a carcinogen under Proposition 65, is less acutely toxic than cyanide. Reportedly the recovery of gold is almost as good with thiourea as it is with cyanide" (page xx).
2. Indeed the report went on to state that "recent evidence from the field suggests that cyanide is more persistent than is predicted by current models" (*Id.* at xxi). Yet, the Draft EIS/EIR does not consider the alternative of using any method other than cyanide leaching to extract the gold and does not reveal the questions that still exist as to the safety, both short- and long-term, of using cyanide.

#### Response 07

1. The Draft EIS/EIR does consider alternative gold extraction techniques. As discussed in Section 3.3.1.3 (Alternate Gold Extraction Techniques), flotation, carbon-in-pulp leaching, vat leaching, and in situ leaching/carbon adsorption were evaluated and determined inappropriate, due to metallurgical or environmental reasons. While the cited U.C. Berkeley Mining Waste Study report does acknowledge that some mines have been prevented from using cyanide, it is not considered preferable based on a *perceived threat*, to encourage use of



thiourea, which is a known carcinogen, instead of cyanide which although more acutely toxic, maintains an excellent safety record. There are also unanswered questions regarding the toxicity of thiourea (Silva, 1988).

2. Thiourea has had a very limited application as a means of extracting gold. It has been used for high grade gold concentrates under extremely acidic conditions. In contrast, the Castle Mountain heap leach process will treat low grade ores that are naturally alkaline. Thiourea would not be technically feasible for use on such ores.

#### Comment 08

1. The Draft EIS/EIR fails to discuss adequately the environmental impacts of the proposed project. The Draft EIS/EIR spends hundreds of pages discussing the environmental consequences of the alternatives. While the length of this discussion is impressive, its substance leaves much to be desired. The document acknowledges impacts, such as likely loss of bighorn sheep foraging habitat and loss of desert tortoise habitat, but the discussion is couched in terms so vague or uncertain as to render the conclusions essentially meaningless. Virtually none of the impacts is quantified, even within a given margin of error. In many cases, the discussion of impacts is based on assumptions which are unsupported. As the result of these deficiencies, the Draft EIS/EIR lacks an adequate depiction of the environmental impacts that will result from approval of the proposed project or the "alternative" thereto.
2. The Draft EIS/EIR's failure to discuss fully and informatively the environmental consequences of the proposed project and its permutation (i.e., "Ivanpah Access Route Alternative") completely frustrates two of the principal purposes of an environmental impact statement: "to require decision makers to examine and consider environmental factors before acting [and to serve] as an environmental "full disclosure" statement, permitting...the public to evaluate the environmental consequences on their own." *California v. Bergland, supra*, 483 F. Supp. at 482. Clearly, the draft's impact analysis will have to be amended considerably in order to comply with NEPA's and CEQA's requirements.

#### Response 08

1. While the statement on the principal purposes of the EIS is correct, the Commenter's interpretation of the detail and level of analysis required reflects only the opinion of the Commenter. For example, CEQA explains that:



- "An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible" (14 CCR § 15151).
2. Existing conditions and impacts were quantified in the Draft EIS/EIR where necessary for an understanding by the decision makers and public of the potential project effects. For example:
- In the analysis of water resources (Sections 4.3 and 5.3), the Draft EIS/EIR quantitatively characterized the hydraulic conductivity and porosity of the aquifer, estimated flow velocities, provided data on Piute Spring monthly flow and total discharge, and estimated Lanfair Valley water balance. The impacts on the aquifer were quantitatively evaluated in terms of ground water withdrawal, and aquifer response (in years).
  - For the vegetation and wildlife evaluations, the acreage of surface disturbances were calculated for each vegetation community (desert grassland, creosote bush scrub, Joshua tree woodland, and blackbush scrub) and summarized in Figure 5.4.1 (Potential Vegetation Impact). The effect on wildlife habitat was quantitatively estimated for Bendire's thrasher, bighorn sheep, and bats in Section 5.5 (Wildlife). An estimated time period was also provided for revegetation recovery. Characteristics of the access routes were quantitatively addressed for road characteristics and desert tortoise populations, as summarized in Table 5.5.1 (Access Road Characteristics and Desert Tortoise Density). Project traffic impacts were quantitatively estimated in Table 3.2.3 (Estimated Weekday Traffic).
  - A detailed quantitative evaluation of air quality impacts was provided in the Draft EIS/EIR (Section 5.6, Air Quality). If additional quantitative detail on this subject was desired by the reader, the Authority to Construct permit was referenced as Appendix F.
  - For its evaluation of health and safety, the Draft EIS/EIR summarized quantities of each type of chemical to be used (see Table 3.2.2, Major Operating Supplies) and discussed cyanide solution concentration, pH, and decommissioning water quality standard (parts per million) in Section 5.7.1.2 (Processing Operations).
  - A quantitative evaluation of the project impacts to visual resources was completed in Section 5.8 (Visual Resources). The evaluation used the Visual Resource Management Program method to assess contrast ratings for land surface, vegetation and structure, and evaluated the project both with and without reclamation activities.

Based upon these quantitative analyses, the Commenter's assertion that "virtually none of the impacts is quantified, even within a given margin of error" is not understood. The Commenter has not explained which analysis he is referring to concerning the environmental consequences.

Comment 09

1. Impacts are not properly identified. Viceroy's proposed mining project is a complex project which includes a number of fairly new chemical processes and technologies. The Draft EIS/EIR fails to describe the nature and extent of its the potential impacts clearly.
2. The document's failure to identify all possible impacts is evidenced by its failure to recognize that, despite its use for many years in mining, the use of cyanide has many unknowns. According to the University of California Mining Waste Study Team report mentioned above, evidence from the Grey Eagle Mine suggests that "cyanide appears to be much more persistent than would be predicted from existing knowledge on attenuation." The report urges investigation of "the long term persistence of cyanide residues...to ensure proper procedures are used to prevent future environmental problems from abandoned mines," (page 17). The report goes on to state, "because of its increasing use, close attention should be paid to wastes containing cyanide. At least two mines in the state (the Noranda Grey Eagle and the Picacho Mines) continue to have problems with cyanide releases from the waste management facilities. Also the large number of gold mines presently in production and continuing to come on-stream will represent a huge inventory of cyanide treated waste. We recommend that the immobilization and destruction of cyanide in cyanide waste from gold mining operations be investigated in the field" *Id.* at xxiv (Emphasis in original).
3. The lack of such information, moreover, means that the Draft EIS/EIR fails to provide the necessary basis for the written findings which the County must make regarding "significant effects" prior to approving the project. See e.g., State EIR Guidelines, Cal. Admin. Code Sec. 15091; Pub. Res. Code Sec. 21081.

Response 09

1. The cited problems with cyanide are applicable to a different type of ore body than those at the Castle Mountain Project site. The Commenter is referred to the remainder of the paragraph from the above cited Mining Waste Study statement regarding the Grey Eagle Mine explains:
  - "This mine was previously worked for copper, and it is possible that residual sulfides are maintaining a sufficiently reducing environment that attenuation by oxidation is not possible. Alternatively, the heavy metals in solution may be forming stable complexes with the cyanide, thereby preventing further degradation. Similar persistence has been noted in tailings where cyanide has formed complexes with heavy metals from gangue minerals."



2. As explained in the Draft EIS/EIR (pages 5.3-1 and 5.3-2), "Samples of ore, protore and overburden from the Castle Mountain Project site have been subjected to geochemical testing to determine the acid generation potential and extractable metals." The results, shown in the Draft EIS/EIR (Table 5.3.1, Summary of Results, Analysis of Ore, Protore, and Overburden), indicate that the measured concentration of metals frequently associated with other ore deposits is relatively low. Further, there are virtually no residual sulfides in the Castle Mountain Project gold ore body. The cited problem of cyanide persistence at the Grey Eagle copper mine is therefore considered to be inapplicable to the Castle Mountain Project.
3. While the cited Mine Waste Study recommends continuation of field investigations of cyanide, it also recognizes that "there are very few cases in California where mining wastes appear to present a public health threat" (page xxv). Based upon the Draft EIS/EIR analysis of the specific characteristics of the ore and protore in the context of cyanide leaching, it was determined that the potential threat to public health from residual cyanide was low and, as such, would not constitute a significant environmental effect.
4. Mines have been using heap leach technology for nearly 20 years. The potential environmental consequences of this method of processing is understood to the degree necessary to evaluate the reasonably foreseeable significant effects, as identified for the Proposed Action in the Draft EIS/EIR.

#### Comment 10

1. The Draft EIS/EIR improperly defers discussion of important environmental impacts. As indicated above, both NEPA and CEQA are "environmental full disclosure laws." Compliance with their respective mandates requires that "all environmental impacts of a particular project [be disclosed]." Only if this is done will the most intelligent, optimally beneficial decision be likely to result." *NRDC v. Morton*, 388 F. Supp. 829, 838 (D.D.C. 1974), *aff'd.*, 527 F. 2d 1386 (D.C. Cir. 1976), *cert. denied*, 427 U.S. 913 (1976). The Draft EIS/EIR patently fails to satisfy this requirement.
2. That this document lacks a complete description of all potential impacts is unquestionable. For example, while the Draft EIS/EIR outlines the need for and the eventual installation of a natural gas pipeline for the Castle Mountain project, it provides no *detailed* description of the pipeline, its length, its location, whether or not it would be removed at the end of the project, or its potential impact.





Response 10

1. The natural gas pipeline is identified and discussed in the Draft EIS/EIR at the level of detail necessary for an understanding of the environmental effects. As discussed in Section 3.2.5.2 (Power Requirements and Supply), and shown in Figure 3.2.9 (Preliminary Utilities Plan), the pipeline would be constructed "within the alignment of the Proposed Searchlight Access Route." The pipeline would be located in this alignment to "limit additional surface disturbance." A detailed description of the access route location, alignment and length is provided in the Draft EIS/EIR (Table 3.2.4, Proposed Access Improvements). Expected impacts that would occur from construction and improvements to the 20.3-mile route were addressed under each applicable environmental discussion in Chapter 5.0 (Potential Environmental Impacts). In particular, the access and pipeline alignment was subjected to a detailed cultural resources inventory; a data recovery program would be implemented for two prehistoric sites identified along the route prior to surface-disturbing activities. The Draft EIS/EIR (Section 3.2.8, Reclamation), explains that at project completion, "aboveground utilities would be removed, underground lines would be capped and covered." Each of the Commenter's questions regarding the natural gas pipeline was addressed in the Draft EIS/EIR.

Comment 11

1. The document also neglects to consider whether planned reclamation will actually be successful. Instead, the Draft EIS/EIR describes a reclamation research program that will be undertaken to determine what reclamation is feasible.
2. It is not appropriate, as the Draft EIS/EIR suggests, to defer gathering current, detailed reclamation data until a later stage in the project's life. This information is not only necessary for comparing alternatives, but it also could be useful in generating true alternatives to the proposed project. Moreover, as discussed above, this information is necessary to an honest assessment of the project's environmental impacts, which in turn is crucial to fulfilling the basic functions of an EIS/EIR.
3. No justification -- other than lack of information -- is provided for deferring analysis of the impacts to the environment of a planned gas pipeline or of the success of the planned reclamation, and, we believe, none exists. The information about these impacts, which is lacking in the draft, such as the reclamation data discussed above, "is essential to a reasoned choice among alternatives" and alternative mitigation measures. CEQ Regulations, 40 CFR

Sec 1502.22. Moreover, the Draft lacks any showing that the overall costs of obtaining it are exorbitant or the means to obtain it are not known. Indeed, as indicated, a research program has already been developed to determine the feasibility of reclamation. *Id.* Therefore, the information must be included. *Id.*

4. Clearly, the agencies' authority to impose conditions on subsequent activities will be reduced once approval of the project has been granted. Deferring consideration of the project's environmental impacts to subsequent decision points is a completely unacceptable substitute for timely consideration of impacts *before* the project is approved. Only at the pre-approval stage can a wide range of alternative approaches to particular problems be considered. Only at this stage can environmental concerns be addressed in a comprehensive fashion, rather than on a piecemeal basis. Consequently, the EIS/EIR must contain a comprehensive discussion of the impacts that will result from project approval. See, e.g., *NRDC v. Bergland*, *supra*, 458 F. Supp. at 938.

#### Response 11

1. The Draft EIS/EIR does not suggest deferring acquisition of reclamation data. First, the scope of onsite research would be only *for implementation of revegetation procedures*, not for the entire reclamation plan. Second, the intent of the revegetation research program is *not to determine its feasibility*, but to determine those *methods that are most suitable at this site*. Information relating to the envisioned environmental impacts to vegetation is available and presented in the Draft EIS/EIR (Section 5.4, Vegetation).
2. The scope of reclamation for the Castle Mountain Project addresses a range of available revegetation procedures and measures to reestablish wildlife habitat, reduce visual contrasts, establish drainage and erosion control, and protect public safety as discussed in the Draft EIS/EIR (Section 3.2.8, Reclamation). While adequate data are available for implementation of each of these elements, an onsite research program was recommended only for the revegetation element.
3. The Draft EIS/EIR, in its review of the Applicant's reclamation plan, suggested that for implementation of revegetation procedures, a research program be developed to ascertain how the available methods of revegetation (i.e., seeding and mulching, transplantation of nursery seedlings, transplantation of onsite specimens, etc.) could be best used on this particular site. While it has been demonstrated that these measures have been successful and cost-effective at other locations, it is desirable to determine which would produce the best results in the least





time at this particular site. Since previously disturbed areas in the vicinity and on the project site demonstrate revegetation by natural processes within a 30- to 60-year time frame as stated in the Draft EIS/EIR (page 5.4-5), it is apparent that adequate results can occur from natural processes, assisted by reclamation revegetation measures. The Draft EIS/EIR, therefore, determined the potential effects and recommended that the Applicant use the best available techniques to achieve revegetation. This additional requirement for a site-specific revegetation program does not mean that the analyses necessary for an understanding of the environmental impacts were deferred or that mitigation is uncertain.

4. The final Reclamation Plan (Viceroy, 1990) has been revised to include the recommendations of the Draft EIS/EIR, to respond to public concerns, and is on file and available for public review as indicated in the User's Guide of this Final EIS/EIR.

#### Comment 12

1. The Draft EIS/EIR improperly dismisses discussion of the cumulative effects of additional mining which may be induced by the project. Consideration of induced impacts is not only appropriate, it is *required* where those impacts are likely to be significant. *City of Davis v. Coleman*, 521 F. 2d 661, 676 (9th Cir. 1975). See also State EIR Guidelines, Cal. Admin. Code Sec 15142 (a). The Viceroy Corporation controls mineral claims on approximately 30,000 acres in the vicinity of the proposed Castle Mountain project. It is conceivable that the company will attempt to produce minerals from these claims in the future, but the Draft EIS/EIR fails to address the cumulative impact of any likely development of these claims. It should not be difficult to forecast a range of possible market conditions and evaluate which of the nearby deposits could be profitably mined.
2. Given the explosion of gold mining in recent years and the three large mines in or adjacent to the National Scenic Area near Castle Mountain (Colosseum, Morningstar, and Mountain Pass) and BLM's contention that there are valuable minerals throughout the East Mojave, a more detailed and realistic cumulative analysis would consider the development of more mines in the vicinity.
3. Additionally, the cumulative analysis should consider the impacts of a number of mines in the region and failure to complete reclamation of each site. Since the Draft EIS/EIR fails to provide any information indicating that revegetation can be successful at mine sites, the analysis should consider the impacts of a number of mines destroying natural habitat and leaving behind open pits and numerous square miles of unvegetated soils. Finally, the



cumulative analysis should not limit itself to concurrent impacts of activities in the vicinity of Castle Mountain, but also additive impacts of consecutive activities. The impacts of the proposed project are not limited to the operating life of the mine.

#### Response 12

1. The mere location of a claim does not ensure it overlies an ore deposit that could be profitably mined. It cannot be reasonably assumed that commercially developable ore deposits exist within the limits of mineral claims established by Viceroy, or at any other particular location within the thousands of other mineral claims in the CDCA. Potential ore deposits are not adequately delineated at this time to allow a meaningful discussion of their possible future development. It is not conceivable that the Applicant would attempt to produce minerals from these other claims unless a deposit of commercial value were located. As explained in the Draft EIS/EIR (page 8.2-8):
  - "Exploratory activities are not necessarily indicative of future mining operations, because in only a small percentage of cases does an exploration activity result in the discovery of an economically viable deposit. At those locations where a potential resource is located, the mineralization must be present in sufficient quantity and quality to be economically produced in order for a mine to be planned."
2. Because future exploratory drilling within the Applicant's mineral claims may not result in the delineation of sufficient mineralization, and because the future market conditions under which particular mineral occurrences could be developed would rely on numerous variables, the probable occurrence and impacts of potential subsequent commercial production can only be speculated. Such speculation is not considered valuable in providing supportable assumptions and an accurate assessment of impacts, both of which are necessary for informed decision making. Instead, the Draft EIS/EIR provided a detailed and realistic analysis of cumulative impacts based upon available data for existing mining operations and mining exploration in the vicinity of the Castle Mountain Project. Reasonable forecasting of impacts that could occur from future mine development was undertaken based upon the degree of mineral exploration in the area and the time commonly necessary to complete the requisite pre-development exploration, engineering, and environmental investigations. CEQ regulations require that an EIS discuss cumulative impacts which are "reasonably foreseeable future actions" (40 CFR 1508.7). In response to the Commenter's conjecture of future cumulative effects from exploration, see the Supplement (Section 5.4, Forecasting of Future Mines Based on Exploration).

3. The Commenter requests an analysis of the impacts of a number of mines in the region and failure to complete reclamation at each site. In preparing a Draft EIS/EIR, it is necessarily assumed that future and other existing mining projects would be approved and operated in conformance with existing laws and regulations. It is therefore not considered reasonable for the present analysis to engage in speculation and identify other mines that could fail to reclaim areas disturbed by operations. Such failure would be in violation of both Federal (43 CFR 3809) and State (SMARA; Cal. Pub. Res. Code § 2710 *et seq.*) reclamation requirements. This can result in a notice of violation, fines, and discontinuation of mining operations. Moreover, failure to reclaim would be protected against by bonding.

#### Comment 13

1. The Draft EIS/EIR neglects to discuss the proposed project's effects on wilderness and national park qualities and conflicts with Wilderness and Park designation. The Draft EIS/EIR recognizes that the project site is located within the East Mojave National Scenic Area and adjacent to several Wilderness Study Areas, but fails to adequately consider the impact to these resources. Nor does the document identify and consider impacts to pending legislation that considers these lands for wilderness and national park status. Pending a decision by Congress on whether to designate these WSAs wilderness, the WSAs must be maintained to preserve their wilderness qualities. Interim Management Policy and Guidelines for Lands Under Wilderness Review, FLPMA Sec. 603(c).
2. The Draft EIS/EIR contains no assessment of the effects of the proposed project -- or even of the exploratory activities now underway -- on wilderness or park values of the project area. The document does not even indicate where the boundaries of the proposed park, wilderness, and Wilderness Study Areas overlaps Viceroy's entire claim block. It is impossible to determine from the Draft EIS/EIR how much, if any, of the claim can be mined without conflicting with possible wilderness designation. As indicated above, such an analysis might reveal a true alternative to the proposed project -- one which involves mining less than the entire deposit. In any case, the impacts to these unique and irreplaceable resources must be analyzed.

#### Response 13

1. The locations of WSAs in relation to the Castle Mountain Project are shown in the Draft EIS/EIR (Figure 4.10.2, Lanfair Valley Recreational, Environmental and Wilderness Management Features). As can be seen in this figure, the proposed project does not overlap any portion of a WSA. The Commenter is referred to the Draft EIS/EIR (Section 5.10, Land



Use), for a discussion of the potential effects on wilderness values. The Proposed Action was reviewed to ensure that it will not cause any unnecessary or undue degradation in a WSA.

2. The proposed Castle Mountain Project does not include mineral extraction activities on mineral claims outside of the Castle Mountain Project site. Mineral claims outside of the defined project area are not a part of the Castle Mountain Project and should not be confused with the present application under review. Future proposed activities in those areas would need to be processed in a separate application that would be subjected to environmental review in conformance with NEPA and, if applicable, CEQA. WSAs are currently managed in accordance with the BLM *Interim Management Policy and Guidelines for Lands Under Wilderness Review* (BLM, 1987). These guidelines do not permit activities in a WSA that could result in impairment of the area's wilderness qualities. Since mining of claims within a WSA could conflict with potential wilderness designation, such activities are restricted.
3. See Supplement Section 4.3.1 (Reduced Project Alternative) for a discussion of mining less of the deposit, as requested by the Commenter.
4. See Response No. 06 regarding potential national park designation. Since the proposed park location and future existence is speculative, its possible boundaries are uncertain.
5. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of project compatibility with the EMNSA.

#### Comment 14

1. The Draft EIS/EIR understates the potential for impacts to the Fort Piute Wilderness Study Area through mining of the water in the Lanfair Valley Aquifer. Much more emphasis seems to have been put upon securing adequate water supplies for the mine that upon assessing the effects of their withdrawal upon the regional environment. The primary issue is not adequate water supplies, but the implications of mining water in excess of safe yield upon surface-water dependent organisms and ecosystems. Non-conservative and unsupported assumptions made throughout the hydrological analysis have greatly shortchanged the environmental assessment process and have led to a failure to identify probable impacts to the integrity of the Fort Piute Wilderness Study Area, which is protected by Section 603(c) of the Federal Land Policy and Management Act.





2. Two major deficiencies in the hydrological analysis indicate that the conclusion reached in the Draft EIS/EIR that there would be no significant impacts to the flow of water at Piute Spring within the Fort Piute WSA is incorrect. First, the analysis makes an assumption that "[e]ventually...the [hydrologic] system behaves as an unconfined aquifer." Not only is an open-aquifer assumption not supported by the evidence presented, it is specifically contradicted by much evidence. Secondly, estimates of recharge are non-conservative and probably overestimate the amount of recharge the Lanfair Valley aquifer is likely to receive. Despite admonitions and apparent demonstrations of scientific conservatism in the hydrogeologic investigations and conclusions, the record demonstrates non-conservative assumptions.
3. The science of ground water hydrology is inexact. Thus, hydrogeologic analysis for environmental assessment must be based upon conservative methods that will provide a worst-case or worst-probable-case model. Without such an allowance for errors, environmental effects cannot be reasonably estimated with any factor of safety. A conservative analysis would show that the basin is delicately balanced hydrologically with recharge about equal to outflow and that the majority of outflow feeds the Piute Spring area. The delicate hydrologic balance, coupled with lack of confined aquifer modeling for at least the part of the basin from the mine-site eastward, leads to the conclusion that the environmental analysis is deficient and unable to support the conclusions presented.

#### Response 14

1. The lithologic logs show no potential confining layers which are continuous across the West Well Field. Alluvial fan deposits, like those of the West Well Field, do not typically contain a regional confining layer. Therefore it was concluded by the Mark Group that overall, the aquifer in the vicinity of the well field will behave as in unconfined conditions. Arguments in support of the overall unconfined nature of the alluvial aquifer are presented in Appendix K of the Mark Group report entitled, *Development of a Ground Water Supply for Viceroy Gold Corporation, Castle Mountain Project* (Mark Group, 1988). This document is cited as presenting the argument for lack of confinement (pages 3-21 and 3-28 of the Environmental Solutions, Inc., 1989) and is on file and available for public review (see Chapter 6.0, References and Resources, of this Final EIS/EIR).
2. Under any circumstances, it would be difficult to hypothesize a continuous confined layer extending, for 16 miles, from the West Well Field to the Piute Spring. Such a condition would result in artesian pressure of 700 feet above the ground surface at PS-2, and 1,200 feet

at the Piute Spring discharge. There is no evidence that such an unusual condition exists in Lanfair Valley. To be conservative, the Lanfair Valley digital model does assume that alluvium aquifer behaves as a confined system until 65 feet of drawdown occurs at any location. This analysis shows no noticeable effect at Piute Spring from either short- or long-term conditions.

3. A number of opinions have been expressed regarding the amount of recharge which occurs in Lanfair Valley. The recharge evaluations by the Mark Group are by far the most extensive and consider a range of precipitation and infiltration possibilities, based on procedures which have been used extensively by the USGS (Environmental Solutions, Inc., 1989). These analyses show a possible recharge range of 2,000 to 5,000 acre-feet per year for the entire Lanfair Valley. The low range of these estimates (e.g., 2,000 acre-feet per year) is considered to be conservative for analyses and modeling purposes. Additional conservatism is provided by assuming that about 860 acre-feet per year of this recharge flows to Fenner Valley, as opposed to Piute Spring. The resulting recharge of 1,140 acre-feet in the portion of Lanfair Valley flowing toward the Piute Range is adequately conservative.
4. Further, the analyses for the conservative 1,140 acre-feet case show essentially no effect at Piute Spring, even considering long-term conditions, to as much as 1,000 years after the proposed pumping would be stopped. The analyses show that there is no reasonable assumption which would result in a significant impact of the spring water from the proposed well field.
5. The water resource investigations were completed for the Draft EIS/EIR as an evaluation of the reasonably foreseeable consequences of the Proposed Action. CEQ regulations do not require worst case analysis. Rather, the regulations focus on "reasonably foreseeable" consequences. The analysis of such impacts must be supported "by credible scientific evidence" and "not based on pure conjecture" and be "within the rule of reason" (40 CFR 1502.22(b)(i)). These concepts were employed in the Draft EIS/EIR analysis to ensure that the assumptions and evaluations were the most conservative and reasonable.

#### Comment 15

1. The Draft EIS/EIR fails to demonstrate that the proposed reclamation will assure successful reclamation as required by SMARA, and improperly ignores the impacts that will arise from unsuccessful reclamation. The extent to which the Castle Mountain area can be reclaimed following strip mining by Viceroy is a major determinant of the magnitude of impacts resulting





from this project. The hazards associated with the failure to reclaim mined areas are the reason the State of California requires mining proposals to include reclamation plans which assure that "mined lands are reclaimed to a usable condition which is readily adaptable for alternative land use" SMARA, Cal. Pub. Res. Code Sec. 2712(a).

2. SMARA's requirement that mined lands be reclaimed does not guarantee, of course, that reclamation is feasible. Indeed, the Draft EIS/EIR recognizes that Viceroy's proposed reclamation is unlikely to assure complete successful reclamation. Yet, the document's discussion of environmental impacts frequently assumes that reclamation efforts will be successful and no evidence is presented to support that claim.

#### Response 15

1. The significance of project impacts is based upon Draft EIS/EIR criteria for significance that were derived from existing environmental standards and regulations. As stated in the Draft EIS/EIR (Section 5.0, Potential Environmental Impacts) considerations for evaluating the magnitude of impacts included:
  - Resource sensitivity, or the probable response of a particular resource to project-related activities.
  - Resource quality, or the present condition of the resource potentially affected.
  - Resource quantity, or the amount of the resource potentially affected.
  - Duration of impact, or the period of time over which the resource would be affected, stated as short-term (up to a few years) or long-term (beyond the operational life of the project).
2. The evaluations were therefore based upon determining acceptable change to the existing environment. Applicable standards and regulations were set based upon sources such as the Endangered Species Act (16 U.S.C. § 1531 *et seq.*), Clean Air Act (42 U.S.C. § 7401 *et seq.*), the National Historic Preservation Act (16 U.S.C. § 470 *et seq.*), CEQA (Cal. Pub. Res. Code § 21000 *et seq.*) (see Draft EIS/EIR, Section 2.4, Regulatory Compliance, for a description of applicable laws and regulations), and from consultation with resource experts.
3. While the Commenter does not explain his interpretations of "feasible," or "success," it is implied that the only acceptable plan for complete successful reclamation is *restoration* of a



landscape identical to that existing prior to the project.<sup>(1)</sup> Restoration is not required under either NEPA or CEQA regulations for determining acceptable environmental impacts. Similarly, neither Federal reclamation requirements (43 CFR 3809.0-5(j)) nor State (SMARA; Cal. Pub. Res. Code §§ 2733 § 2756) reclamation requires restoration (see Section 4.1.4.2, Revegetation, of this Final EIS/EIR for an explanation of reclamation requirements).

4. A key point in determining what is *successful* reclamation is contained in the SMARA citation referenced by the Commenter. The intent of reclamation is to assure that "mined lands are reclaimed to a usable condition, which is readily adaptable for alternative land use" (SMARA, Section 2712(a)). This means that reclamation success is not dependent upon restoration of the original vegetation composition/cover or site topography. Further, "reclamation is intended to provide for the production of minerals, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment, and to provide for public health and safety" (County Development Code Section 812.0101). The Draft EIS/EIR demonstrates that *it is feasible* to achieve SMARA's goal for alternative land uses with implementation of reasonable reclamation measures. Federal law provides that reclamation is "taking such reasonable measures as will prevent unnecessary or undue degradation of the Federal Lands, including reshaping land disturbed to an appropriate contour, and where necessary, revegetating disturbed areas so as to provide a diverse revegetative cover."
5. The proposed project is an open pit mine, not a strip mine.

#### Comment 16

1. As the Draft EIS/EIR acknowledges, Viceroy's proposed reclamation is inadequate to assure complete successful reclamation. The Draft EIS/EIR clearly reveals the inadequacy of Viceroy's proposed reclamation. A learn-as-you-go method of reclamation as described in the Draft is no substitute for analysis of the impacts of proposed reclamation during the environmental review for the project. Although a stated goal of reclamation is to reduce impacts to wildlife habitat, there is no substantive discussion of the feasibility of regaining the existing plant species diversity and cover. Neither are the procedures presented whereby reclamation can be accomplished.

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(1) This implication again surfaces in Comment No. 16 ("...there is no substantive discussion of the feasibility of regaining the existing plant species diversity and cover") and No. 18 ("Backfilling...is not adequately considered...").

2. Use of the mining site for wildlife habitat will require more than simple reseeding, contouring the overburden and ore piles, and staining rock. Assurances that the plant species proposed for use in revegetation will support indigenous wildlife are absent. This is especially important where non-native species are relied on to revegetate mined areas. The Draft EIS/EIR recognizes the possibility of exotic species colonizing the disturbed area, but does not adequately consider the negative impacts of this. In fact, the document reveals that the Applicant and Agency apparently believe it is not a negative impact if the level of exotic invasion is comparable to that occurring at other similar project sites. The intent should be to allow no exotic establishment. Thus, the Draft EIS/EIR itself reveals that the proposed reclamation is clearly inadequate to satisfy SMARA's requirement that successful reclamation be assured.

#### Response 16

1. The Draft EIS/EIR summarizes the procedures and methods for reclamation and reviews them to the degree necessary for assessing potential impacts during the current environmental review process. Proposed and available measures are specifically described for the various aspects of the Castle Mountain Project reclamation plan, including revegetation procedures, measures to reestablish wildlife habitat, measures to reduce visual contrasts, drainage and erosion control, and public safety, in compliance with both Federal and State reclamation regulations. The Draft EIS/EIR evaluates potential impacts of the Castle Mountain Project in the context of the planned measures.
2. The Draft EIS/EIR does not contain a specific evaluation of the timeline for reestablishing "existing plant species diversity and cover," since this is not a determining factor for assessing the potential significance of vegetation impacts and is not a requirement of 43 CFR 3809 or SMARA for reclamation. However, the Draft EIS/EIR does note that natural revegetation processes have reestablished plant communities on previously disturbed onsite areas (see Section 4.1.4.2, Revegetation, of this Final EIS/EIR for a discussion of onsite natural revegetation). Detailed scientific analyses required as part of the revegetation program will specifically determine the subtle differences in composition and plant densities of this and other disturbed areas to aid in establishing specific revegetation goals for the project site.



3. Since the revegetation program will use dominant species common to Lanfair Valley including *Larrea tridentata*, *Hilaria jamesii* and *Oryzopsis hymenoides*, that currently support indigenous wildlife, it is reasonable to assume that they will continue to support the same wildlife species following revegetation.
4. The project would not rely upon "non-native species" to revegetate disturbed areas. While the Draft EIS/EIR does recognize the possibility of exotic species colonizing in disturbed areas, it explains that these species are already common to Lanfair Valley. Many naturalized exotic herbaceous and grass species occur in the area, with no apparent significant adverse effects. This is not meant to imply that non-native species are always a desirable element of vegetation, and the Draft EIS/EIR therefore recommended that measures be employed to control excessive invasion of such species. However, since a number of non-native plants are well established and widely distributed across the Mojave Desert, the Commenter's suggestion to "allow no exotic establishment" on this site is unreasonable. Further, it should be noted that 43 CFR 3809 regulations, which controls reclamation of the Castle Mountain Project site does allow use of exotic species to revegetate the area (43 CFR 3809.0-5). In contrast, 43 CFR 3802 regulations applicable only in WSAs, disallow use of exotics and require that native species be used in revegetation (43 CFR Section 3802.0-5).

#### Comment 17

1. The proposed reclamation is incomplete, vague, makes unsupported claims, and is inadequate to assure revegetation. The Draft EIS/EIR purports to describe a "reclamation plan." Unfortunately, the so-called plan shares the proposed Draft's main defect: it does not contain specific, proven measures to assure successful revegetation. Instead, it offers vague mitigation proposals, unsupported claims that those proposals will suffice to assure revegetation, and even more vague assurances that if they fail, different methods that will work will be instituted. Thus described, it is apparent that no reclamation plan exists at all and is clearly inadequate to meet SMARA's requirements.

#### Response 17

1. The reclamation plan is on file and available for public review at the County as part of the required components of Viceroy's initial application to the County. The plan is cited in the Draft EIS/EIR (page 2.1-1) and in Chapter 13.0 (References). The County accepted the application and reclamation plan as a complete for filing on July 19, 1988 (File No. SAMR/88-0003/DN 585-1145N). Determination of the acceptability of that plan in meeting the requirements of SMARA is the responsibility of the decision makers, not the EIS/EIR.





2. The level of detail for reclamation procedures provided in the Draft EIS/EIR is appropriate for the degree of specificity necessary to make an informed decision on the discretionary entitlements being requested. If the project is approved, the BLM and County will require that detailed procedures in the complete reclamation plan be implemented, in compliance with both 43 CFR 3809 regulations and NEPA and CEQA requirements for mitigation compliance and monitoring.
3. Specific, proven measures for revegetation are provided in the Draft EIS/EIR, including reseedling, transplanting, fertilizing, and watering which are common and proven methods to establish vegetation. The Draft EIS/EIR requires that these and numerous other specific measures be employed to reestablish an onsite habitat that will be usable to wildlife (see pages 3.2-49 and 3.2-50).

#### Comment 18

1. The final overburden and heap pile treatment proposed in the Draft EIS/EIR is to return stored topsoil and reseed the piles. This proposal does have some intuitive charm, but ignores a substantial literature on the problems encountered in reusing stockpiled soils. Soil texture and structure are destroyed in the process of stockpiling and replaced soil lacks the productivity of the original soil. The longer the soil is stockpiled, the less productive it becomes because soil biota die. Thus, to reproduce even marginally productive soil on these piles of crushed rock requires more thought and planning than is evidenced in the DEIS. There is no documentation concerning required amounts, sources, effectiveness or cost. Therefore, the success of this proposal is questionable and the full range of alternatives has not been provided.

#### Response 18

1. The Commenter is in error regarding the final overburden and heap leach pile treatments. The Draft EIS/EIR (pages 3.2-52 and 3.2-53) states that, "Available soils would be replaced. Revegetation efforts would be completed in accordance with the Revegetation Program." Such efforts are not limited to reseedling, but include transplantation of plants from disturbed areas and transplantation of nursery seedlings, in addition to the numerous other treatments discussed in the revegetation program.
2. Problems cited by the Commenter for stockpiled soils are not universal, particularly in the desert environment. Desert soils in this region (aridisols) typically have thin, poorly developed horizons (structure). Soil texture may be poorly differentiated. The soils typically

lack significant organic materials, which commonly limits soil biota. Because of these factors, the actual benefit of stockpiling desert soils for use in revegetation has not been well established. Evidence of natural revegetation on the Castle Mountain Project site (and at other nearby locations) where soils have been stripped by previous activities, may indicate that the need for stockpiling the thin soils is limited. However, the Draft EIS/EIR recommends that studies be completed onsite as part of the revegetation program to determine the extent to which soils should be stockpiled and where they would be most effectively used. The preliminary estimated costs for soil replacement are included in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR. The source of soils would be disturbed onsite areas. Since soils would be incrementally stockpiled and used as activities in an area are completed, the Commenter's concerns for long-term stockpiling (i.e., the life of the project) may not be warranted.

3. The relationship between *use of soils* and the Commenter's concern for *addressing a full range of alternatives* to the proposed project is not understood.

#### Comment 19

1. Backfilling as a part of the reclamation program is not adequately considered in the Draft EIS/EIR. It is only discussed in the section which addresses the failure (or refusal) to consider certain alternatives. Backfilling should be considered in a detailed reclamation plan as part of the determination of potential impacts from the Castle Mountain project. It is clearly an option that offers a way to decrease impacts to wildlife habitat, natural drainages, and scenic values, as well as a way to decrease the adverse affects likely to occur to the overburden and ore piles, such as erosion.
2. While the Draft EIS/EIR suggests that the cost of backfilling is a reason it is not fully considered, the document fails to provide a detailed analysis of why the project can not be profitable and still backfill the pits. Without this analysis the reader has no way of determining that the exposed pits and rock piles left by the project are not unnecessary and undue degradation of public resources.

#### Response 19

1. Backfilling of mined materials into the pits is not a commonly employed technique for hard rock minerals. While mine pit backfilling was not adopted as part of the Proposed Action or as an alternative method of overburden disposal, it was given adequate consideration in the





Draft EIS/EIR (Section 3.3.1, Alternative Mining and Processing Technologies). Since environmental objectives to avoid significant effects and Federal and State reclamation requirements could be met without backfilling, there was no reason for it to be recommended in the Draft EIS/EIR. This method for disposal of overburden and heap leach piles was determined to offer no significant environmental benefit for this project, but would result in additional environmental costs, including unnecessary air quality impacts, water use, and combustion of fossil fuels. Explanation of the costs involved in backfilling is further analyzed in Section 3.3.1.2 (Castle Mountain Project Backfilling Constraints and Opportunities) of this Final EIS/EIR.

2. The mine pits would cover about 135 acres, or less than one-tenth of one percent of wildlife habitat in Lanfair Valley. Disturbance for this amount of wildlife habitat is not considered a significant impact in the context of available creosote bush scrub habitat in the Mojave Desert or in Lanfair Valley. The Draft EIS/EIR (Figure 3.2.5, Preliminary Site Plan) shows that the mine pits occur at the head of a small canyon. The catchment area affected by the pits would therefore be limited (see Figure 4.9). The Draft EIS/EIR indicates that erosion of the overburden or heap piles is not expected to be a problem.
3. The Draft EIS/EIR backfilling evaluation does note that it could reduce the project's visual impact. It is expected that this activity could reduce the final volume of the overburden and heap pads by about 50 percent, since the mine pits could not accommodate the complete volume of extracted material. This would mean that even with the mine pits filled to the degree possible, about one-half of the volume of the overburden and heap leach piles would remain. The upper mine pit walls would still be visible as the slopes of the original topography could not be recreated with crushed and broken rock. It was determined in the Draft EIS/EIR (Section 5.8, Visual Resources) that with application of mitigation measures to reduce visual contrasts, the project would comply with BLM VRM objectives. Therefore, no significant impact would occur, so there were no further environmental reasons to consider the visual benefits from backfilling. A VRM analysis for the project *with* backfilling is included in Section 3.3.2.1 (Maximum Pit Backfilling) of this Final EIS/EIR.
4. Backfilling was therefore determined inappropriate for a number of reasons unrelated to cost. While the Draft EIS/EIR discussion (pages 3.3-3 and 3.3-4) notes that backfilling may be considered an economically unproductive activity that could open pit mining operation



infeasible, an economic evaluation of backfilling for the Castle Mountain Project was not considered necessary, since no substantial environmental benefit would be realized from such an activity.

5. For an explanation of "unnecessary and undue degradation," the Commenter is referred to Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR.

#### Comment 20

1. Reclamation involves more than revegetating the mined tailings, of course. Additional acres will be disturbed by the processing plant and other facilities, ponds, and ore storage pads. What about spillage of fuels and other hazardous materials? Won't they affect soil properties? What are the changes in soil properties that would occur that would make the resulting soil less productive than it was originally? What would the degree of this reduction be? The discussion in the Draft EIS/EIR is quite uninformative -- unacceptably so.

#### Response 20

1. The Proposed Action does not involve either the production or treatment of tailings.
2. The Draft EIS/EIR (Section 3.2.8, Reclamation) discusses a reclamation plan that includes treatment at other facilities including the processing plant, solution storage areas, and heap leach pads.
3. See Response No. 17 regarding soil properties. Since desert soils are typically poorly developed and have little, if any, structure, their removal and replacement is not expected to significantly affect their properties. As shown in Figures 4.2 and 4.3 of this Final EIS/EIR, onsite vegetation has recovered on overburden areas with no soil.
3. The Draft EIS/EIR (Section 3.2.5.4, Equipment, Structures, and Supplies) discusses physical containment structures that would contain potential spills of hazardous materials.
  - "Tanks for these fuels and oils would be installed on prepared foundations enclosed with berms adequate to contain the contents of the tanks in the event of a leak or rupture, as determined by the DEHS."
  - "Storage facilities for reagents (e.g., sodium or calcium cyanide, or hydrochloric acid) would include secondary containment for spills."

The spill prevention, control, and recovery plan would also be filed with the County for management of reagents (page 5.7-6). State law, pursuant to SB 1050, requires that a fuel containment area be constructed at fuel transfer points. No significant effect to soils are therefore expected.

#### Comment 21

1. The reclamation outlines (*sic*) fails to provide a safe closure plan for the cyanide ponds. What measures will be taken to ensure residues are completely removed from the ponds and underlying soils? Will covers be required to ensure rainfall does not later transport these pollutants?

#### Response 21

1. The Draft EIS/EIR summary of the reclamation plan specifies that decommissioning of the heap leach pads and solution storage areas will involve neutralizing cyanide in accordance with RWQCB procedures. Decommissioning of facilities would be completed such that there would be no potential for residual chemicals to significantly affect soils or ground water.

#### Comment 22

1. In spite of serious shortcomings of the reclamation outlined, the Draft EIS/EIR uniformly assumes that reclamation will be successful when it discusses the environmental impacts. The Draft EIS/EIR assumes that revegetation will be successful. However, as we have just shown, there is *no* evidence to support the assumption that Viceroy's proposed reclamation is feasible -- technologically *or* economically. Therefore, the Draft EIS/EIR's discussion of environmental impacts is grossly deficient. This discussion should contain an analysis of the environmental consequences following unsuccessful reclamation.

#### Response 22

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR, for a discussion of onsite natural revegetation. Refer to Comment Nos. 14, 15, and 16 regarding revegetation success. Based upon existing examples of natural revegetation in Lanfair Valley, the Draft EIS/EIR concluded that revegetation of the project area will be achieved.
2. The Commenter is in error in stating that the Draft EIS/EIR evaluations relied on revegetation of the site in determining impacts. Revegetation is primarily a mitigation measure for vegetation and wildlife habitat. In its evaluation of potential effects, the Draft EIS/EIR concluded that no significant impact would occur to vegetation because the project would not:



- Substantially affect a threatened or endangered species or its habitat.
- Substantially diminish habitat for a plant species as stated in the Draft EIS/EIR (page 5.4-1).

And that no significant impact would occur to wildlife, because the project would not:

- Substantially diminish the habitat for a wildlife species.
- Interfere substantially with the movement of resident or migratory wildlife species.
- Substantially affect a threatened or endangered species or its habitat, or a species officially proposed as threatened or endangered as stated in the Draft EIS/EIR (page 5.5-1).

Based on these criteria, the significance of the project's unmitigated effect is independent of revegetation. However, revegetation procedures would be implemented as part of the project mitigation measures, in compliance with 43 CFR 3809 and SMARA.

#### Comment 23

1. The EIS lacks an analysis of catastrophic impacts. It is clear that, when there is uncertainty about the extent of the adverse impacts likely to result from a proposed action, NEPA and the CEQ regulations impose special obligations on Federal Agencies, including the Bureau of Land Management. As demonstrated above, key information that has not been included in the Draft EIS/EIR must be supplied. In addition, however, 40 CFR Sec 1502.22(b) provides that, if information relevant to adverse impacts is incomplete, the agency must summarize the existing scientific evidence relevant "to evaluating reasonably foreseeable significant adverse impacts," and must evaluate those impacts, including "catastrophic consequences," even where their probability of occurring is low. Certainly, as we have noted above, it is not unreasonable to expect that reclamation will not succeed, that toxic materials will be released or that diminution of the flow at Piute Spring will occur. In fact, as we have discussed, the Draft EIS/EIR reveals clearly that successful reclamation is highly problematic. The significance of reclamation failure, were it to occur, can hardly be denied given SMARA's mandate, to say nothing of the unique environmental resources potentially at risk.
2. For these reasons, it is incumbent upon the BLM and County to examine the impacts of catastrophes involving *at least* reclamation, toxic materials on the ground water, 100- or 1,000-year storms on project site, and the water resources at Piute Spring prior to approving this project. In particular, the impacts of a total failure of reclamation at different stages of the project and under different conditions must be analyzed.





Response 23

1. The Commenter's opinions on uncertainties regarding potential adverse impacts from the Castle Mountain Project are not reflected in the available data that were used in the Draft EIS/EIR evaluations, or in the specific conclusions derived from those data. The Draft EIS/EIR has summarized relevant existing scientific evidence in its evaluation of potential environmental impacts. The Commenter has not presented or referenced additional substantive information on reclamation, toxic materials, or water resources that would indicate that the information used and conclusions reached in the Draft EIS/EIR are incomplete or uncertain. Based upon the known evidence presented in the Draft EIS/EIR and in this Final EIS/EIR, the Commenter's "catastrophes" are not reasonably foreseeable impacts of the proposed project.
2. CEQ regulations have, since 1986, stated that in discussing "reasonably foreseeable" consequences, the agency should "include impacts which have catastrophic consequences, even if their probability of occurrence is low, *provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason*" 40 CFR 1502.22(b)(1) (emphasis added).
3. The following is offered to guide the Commenter to responses on the issues mentioned:
  - See Response No. 20 regarding containment of toxic chemicals and Response No. 21 regarding detoxification of solutions.
  - A ground water monitoring and contingency plan has been prepared and will be implemented to preclude a significant effect on Piute Springs, by observing actual aquifer drawdown and modifying project withdrawals as described in Section 4.1.5 (Water Resources) of this Final EIS/EIR.
  - Total failure of revegetation reclamation is not within the rule of reason, because natural revegetation has occurred without the assistance of a revegetation program at previously disturbed onsite areas, as shown in Section 4.1.4.2 (Revegetation) of this Final EIS/EIR.
  - Project facilities have been planned so that these would not be affected by stormwaters, even from a probable maximum precipitation event, as shown in Section 4.1.5.3 (Potential Stormwater Effects) of this Final EIS/EIR.

Comment 24

1. The Draft EIS/EIR fails to propose meaningful mitigation measures. Despite its inadequacies, the Draft EIS/EIR reveals clearly that significant, widespread adverse environmental impacts are likely to attend approval of Viceroy's proposed project, including, for example, violation of the state reclamation requirement, ground water contamination, ground water mining and

impacts to Piute Spring, water quality degradation, and increased erosion. As the Draft itself reveals, CEQA and NEPA require that these and other impacts be avoided by imposition of mitigation measures. The Draft EIS/EIR fails to propose sufficient meaningful mitigation measures to satisfy this non-discretionary obligation. To the extent mitigation measures are considered, they are inadequate or so vaguely described that they provide no basis for analysis.

2. Reliance on these vague mitigation promises that further study, monitoring and surveillance may reveal potential impacts, but do not in themselves mitigate impacts. The measures proposed offer no sure mechanism for moving from studying the problems to solving them. Mere assertions that problems will be solved in the absence of any proven or even proposed solutions will not satisfy the duty to develop solutions. If the BLM and San Bernardino County cannot, or will not, obtain the information needed to formulate genuine, specific mitigation measures, then they have insufficient information to determine whether there will be no significant environmental impact from Viceroy's proposed mining project.
3. Had the Draft EIS/EIR adequately analyzed the effectiveness of proposed "mitigation" measures, as it is required to do under both NEPA and CEQA, that analysis would undoubtedly have disclosed that there is little reason to believe that not just the monitoring measures will mitigate the environmental impacts of the project.

#### Response 24

1. The vague nature of the comments has not provided sufficient information for particular concerns to be addressed. However, the following is offered in an attempt to guide the Commenter to the appropriate sections of the Draft EIS/EIR document.
2. The Commenter is referred to the Draft EIS/EIR (Chapter 7.0, Unavoidable Adverse Impacts), for a discussion on the subject of impacts that would occur with implementation of mitigation measures. The Commenter's concerns for reclamation, ground water contamination, ground water withdrawal, and erosion are discussed in Chapter 5.0 (Potential Environmental Impacts), and were determined to be avoidable impacts. Based upon the significant impacts identified in Chapter 5.0 and the detailed mitigation measures incorporated in the project design, none of the unavoidable environmental effects would be significant.



3. The Draft EIS/EIR was prepared in compliance with NEPA and CEQA requirements that an EIS and EIR identify mitigation measures for each significant adverse effect (14 CCR § 15126(c) and 40 CFR 1502.16).
4. The Draft EIS/EIR presents a detailed description of both regulatory-required and supplemental mitigation measures, plus an analysis of the effectiveness of these mitigation measures. The document explains that measures to reduce or avoid the potential environmental effects of the Proposed Action have been identified through public comments submitted in the scoping process, and from reviews by the BLM and County. As stated in Draft EIS/EIR (page 5.1-3):
  - "The Applicant has revised the project to include most of these measures and has committed to incorporate measures in final design plans. These measures are restated specifically for each environmental topic in Chapter 6.0, Mitigation Measures. The effectiveness of these mitigation measures is considered in this impact evaluation."
5. Mitigation measures identified through the Draft EIS/EIR evaluations were developed to address each specific effect identified. Additional mitigation measures were also discussed in the Supplement (Section 3.2) and are discussed in Section 3.2.1 (Additional Mitigation Measures) of this Final EIS/EIR. The Commenter's assertion that "they are inadequate or so vaguely described that they provide no basis for analysis" is not supported by the facts. Specific measures were incorporated into the project description in Chapter 3.0 (Description of the Proposed Action), and analyzed in Chapter 5.0 (Potential Environmental Impacts). For example, the Commenter's concern for mitigation measures regarding potential surface or ground water contamination are specifically addressed in the Water Resources evaluation (page 5.3-1):
  - "Process facilities using reagents (such as the solution ponds) during operation would be designed and constructed to contain large storm flows and avoid overflow discharges, using criteria approved by the Regional Water Quality Control Board (RWQCB), Colorado River Basin. During reclamation, flow from the process areas would be directed back into natural drainages, but only after facilities undergoing reclamation had been neutralized in accordance with requirements of the RWQCB and/or BLM."

These specific measures are known to be adequate, as evidenced at other operations for which the RWQCB has regulatory authority.

6. The Commenter's statement that the measures that would be implemented are "vague mitigation promises that further study, monitoring and surveillance may reveal potential



impacts" is similarly inapplicable to this Draft EIS/EIR. Specific impacts expected from the project, identified throughout Chapter 5.0 (Potential Environmental Impacts), are summarized in Table 1.1.1 (Summary of Potential Effects and Mitigation Measures). This table reveals that, for the approximately 40 identified impacts and over 80 mitigation measures specified, no additional study, monitoring, or surveillance is recommended to determine potential impacts. The analyses necessary to determine each impact have been completed for the Draft EIS/EIR. However, it is recognized that specific measures would be employed as part of the project, and actions would be taken by the BLM and County, to observe and monitor those measures. Mitigation measures do incorporate monitoring procedures, not to determine impacts, but as part of a system of verification and compliance review, as required by the BLM in accordance with NEPA, and the County in accordance with the newly adopted CEQA requirements (Cal. Pub. Res. Code § 21081.6).

#### Comment 25

1. Information has been improperly incorporated by reference. Both NEPA and CEQA authorize the incorporation of information by reference in EISs and EIRs respectively. The applicable requirements for both types of documents have been blatantly ignored in the instant draft.
2. The State EIR Guidelines provide that an EIR may incorporate a document by reference if the document "is a matter of public record or is generally available." Cal. Admin. Code Sec. 15150(a). The EIR must state where the document is available and must "briefly summarize [ ]...or briefly describe [ ]" the contents of the incorporated material. *Id.* Secs. 15149(b) and (c). Virtually identical requirements have been imposed for EISs. See CEQ Regulations, 40 CFR Sec. 1502.21.
3. Several documents, including several related to hydrology, are incorporated by reference into the Draft EIS/EIR. These documents include Viceroy's future reclamation plan which cannot be incorporated by reference because it is essential to an understanding of the project and its impacts. See, e.g., *Akers v. Resor*, 443 F. Supp. 1355, 1358 n. 5 (W.D. Tenn., 1978). The lack of sufficient summaries of information incorporated by reference makes it virtually impossible to engage in meaningful review of the EIS/EIR.

#### Response 25

1. CEQA recognizes that incorporation by reference is a necessary device for reducing the size of EIRs and provides that:

- "An EIR...may incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public (14 CCR § 15150(a))."

"...Such other documents shall be made available to the public for inspection at a public place or public building."

"...The incorporated part of the referenced document shall be briefly summarized where possible or briefly described if the data or information cannot be summarized."

CEQ regulations specifically allow incorporation by reference so long as the material "is reasonably available for inspection" (40 CFR 1502.21).

2. The Draft EIS/EIR appropriately provides summaries of documents incorporated by reference, and notes public locations where the incorporated documents may be reviewed. The two documents that are incorporated by reference in the Draft EIS/EIR were placed on file for public review for the benefit of reviewers desiring additional background information. These included the *Application for Mining Reclamation Plan Review and Site Approval* (Viceroy, 1988) and the *Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring* (Environmental Solutions, Inc., 1989). The relevant information from these documents is summarized in the Draft EIS/EIR, as required by NEPA and CEQA.
3. The Applicant's *Application for Mining Reclamation Plan Review and Site Approval* (Viceroy, 1988) was appropriately incorporated into the project description for its general background on the proposed project, such as in mine pit configurations and operational information. That application has been on file and available for public review since before the Draft EIS/EIR was published. The relevant material from this Application, that was necessary for environmental impact evaluations, was summarized in the Draft EIS/EIR (Section 3.0, Description of the Proposed Action and Its Alternatives). The details of reclamation were virtually repeated fully in the Draft EIS/EIR. The reader is referred to the revised reclamation plan that includes the recommendations from the Draft EIS/EIR for additional information.
4. The technical analysis entitled *Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring* (Environmental Solutions, Inc., 1989) is a detailed study undertaken for the Draft EIS/EIR. The major findings and conclusions of this study are summarized in the Draft EIS/EIR (Sections 5.2 and 5.3, Water Resources). This study was placed on file for public review at the BLM and County and incorporated by reference in the interest of reducing the size of the Draft EIS/EIR. Incorporation by reference for such long, descriptive, or technical documents is appropriate (see 14 CCR, Section 15150).



5. The Draft EIS/EIR (Chapter 13.0, References) also notes several other documents that, while not incorporated by reference, are on file and available for public review at the BLM, Needles Resource Area office, and/or County Land Management Department, for the benefit of those reviewers desiring additional background information.

#### Comment 26

1. The EIS/EIR fails to demonstrate compliance with the Mining Law of 1872. As recognized in the Draft EIS/EIR, Viceroy's right to mine, if any, is subject to the imposition of conditions that will minimize environmental impacts and satisfy applicable laws. The document, however, fails to demonstrate that Viceroy has satisfied the statutory prerequisites for approval of its proposed mining project.
2. The Mining Law of 1872 provides that, if a "valuable mineral deposit" is found, 30 U.S.C. Sec. 22, the prospector may stake a claim, mine and remove the deposit. Even assuming that the law grants those who satisfy this statutory prerequisite a "right to mine," a proposition that is not totally free from doubt, it is clear that regulation by the BLM of mining activities to protect the environment and minimize surface impacts is fit and proper. Indeed, as the Draft EIS/EIR acknowledges that (*sic*) the BLM is obligated to impose conditions on the Castle Mountain project which are necessary to protect the environment and assure full reclamation.
3. It is also clear that the costs of complying with these conditions as well as other costs associated with the proposed project including extraction, preparation for market, transportation, labor and reclamation, must be taken into account in deciding whether a valuable deposit has been recovered. See *NRDC v. Berklund*, *supra*. Only if the mining company can show that the proposed project is likely to make a profit after all costs are considered does a valuable claim exist. See, e.g., *United States v. Coleman*, 390 U.S. 599 (1968). The EIS is the appropriate and necessary vehicle for determining whether a valuable deposit has been discovered as well as for determining whether reclamation and other environmentally protective objectives can be accomplished. See, e.g., *NRDC v. Berklund*, *supra*. The Draft EIS/EIR, however, fails to provide the information needed for rational decision making on this critical issue.
4. For the environmental costs of a project to be taken into account, it is obvious that all likely impacts must first be identified and then that specific terms and conditions to prevent or mitigate those impacts must be established. The steps necessary to achieve full reclamation





must also be established and the costs of complying with all these requirements must be set forth along with all other costs against the predicted "benefits." Only with this information can the decision maker and the public determine if a prudent person, cognizant of the mandate to protect the environment while mining and committed to reclaiming fully the degradation resulting therefrom, would commence extraction of these deposits, given their character.

5. As discussed above, the Draft EIS/EIR ignores or defers analysis of significant environmental impacts and lacks particular mitigation measures tied to specific impacts and to particular stages of the project. In lieu of such measures, the EIS/EIR substitutes vague management constraints, the compliance costs of which are impossible to estimate. The reclamation described is extremely general and non-specific, as even a cursory comparison with Homestake Mining Company's reclamation plan for its McLaughlin project reveals. Thus, another reason for condemning the "after the fact" approach taken in this document is that it prevents the costs of complying with measures required to protect the environment from being established and incorporated into the decision-making process.
6. Since the Draft EIS/EIR fails to address the kind of measures for which costs can be estimated, it is perhaps not surprising that no reclamation budget is supplied. According to the BLM, however, Viceroy was prepared to spend between 7 and 21 cents per ton for reclamation of this project--even before its environmental impacts were fully revealed. BLM, *Gold Mining Inspection -- California Desert Conservation Area*, Appendix 1 (May, 1988). The next version of the EIS/EIR should explain exactly what reclamation practices would be covered at each end of this range as well as at different points within it.
7. The next version, unlike the Draft EIS/EIR, should also provide cost figures for other activities associated with this project such as transportation and fuel. The market prices of the metals to be produced and the sales figures should also be provided.
8. All of this information is omitted from the Draft EIS/EIR. Unless and until it is provided, the necessary valuable deposit determination cannot be made and Viceroy's plan of operations cannot be approved.

#### Response 26

1. The Commenter's view that the Draft EIS/EIR should demonstrate whether the Applicant "has satisfied the statutory prerequisites for approval of its proposed mining project" is inconsistent with the purposes of an EIS under NEPA or an EIR under CEQA. Determination of the

project's conformance with statutory requirements is the exclusive right of the Lead Agencies as part of the planning and approval process. As stated in the Draft EIS/EIR (page 2.1-1):

- "The purpose of this Environmental Impact Statement/Environmental Impact Report (EIS/EIR) is to: (1) identify and evaluate the potential impacts of the Proposed Action on the environment, (2) indicate the manner in which those effects can be mitigated or avoided, and (3) identify alternatives to the project."
2. The issue of whether a valuable mineral deposit has been found is determined by the Secretary of the Interior. BLM regulations implementing FLPMA specifically acknowledge that "[u]nder the mining laws a person has a statutory right ... to go upon the open ... Federal lands for the purpose of mineral prospecting, exploration, development, extraction and other uses reasonably incident thereto" 43 CFR 3809.0-6. Contrary to what the Commenter suggests, the EIS/EIR is not the vehicle by which the Department of the Interior determines whether a valuable deposit has been located.
  3. The Commenter has referred to *United States v. Coleman* 390 U.S. 599 (1968) regarding mining costs. The Court, in *United States v. Coleman*, 390 U.S. 599 (1968), held that the "prudent man" and "marketability" tests look to the costs of extraction and transportation and whether there is a demand for the particular mineral. The Court nowhere suggested that reclamation costs are included for purposes of determining whether there has been a "valuable discovery." It should be noted that *Coleman* was decided on the grounds that a valuable mineral deposit did not exist because, in view of the immense quantities of identical quartzite stone found in the area, the deposit was a "common variety" and thus fell within statutory language that common varieties do not constitute valuable mineral deposits. The Castle Mountain Project, in contrast, involves gold, which is not a "common variety" metal.
  4. The Commenter's opinion that the "...EIS is the appropriate and necessary vehicle for determining whether a valuable deposit has been discovered..." is also unsupported by both NEPA and CEQA. The dollar value of the deposit was irrelevant in the Draft EIS/EIR assessment of potential project impacts. Further, using such a number (which would constantly vary with the price of gold and project costs) would not be appropriate in "determining whether reclamation and other environmentally protective objectives can be accomplished" as suggested by the Commenter. The Draft EIS/EIR requires that measures designed to protect the environment *must be accomplished* if mining is going to occur. Since the BLM and County will assure the completion of adequate reclamation by requiring a bond, the Commenter's suggestion that a specific cost for such activities be determined in the Draft



EIS/EIR is therefore unnecessary. Moreover, a reliable cost estimate must be based on detailed design engineering plans. If the proposed project is approved, the BLM and County will determine appropriate bonding based upon each specific activity undertaken by the Applicant and the estimated cost for remediation of the affected environment relative to each activity. Nevertheless, in response to the Commenter's request, preliminary reclamation cost estimates have been included in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

5. Since the BLM and County will require bonding as part of the project, and the Draft EIS/EIR requires a mitigation monitoring program in compliance with CEQA, the Commenter's concerns for mitigation and reclamation compliance are satisfied.
6. The draft reclamation plan (Viceroy, 1988) filed with the County was prepared to meet the requirements of SMARA, as was the referenced reclamation plan for the Homestake Mining Company McLaughlin Project. The final reclamation plan (Viceroy, 1990) has been expanded to incorporate the Draft EIS/EIR recommendations and is comparable to the plan for the McLaughlin Project.

#### Comment 27

1. The Draft EIS/EIR fails to demonstrate compliance with the Migratory Bird Treaty Act of July 3, 1918. The Draft EIS/EIR recognizes the problems associated with use of cyanide solution where it is accessible to wildlife, especially avian species. The document fails to adequately demonstrate that the proposed project and its mitigation efforts will be sufficient to satisfy the statutory requirements of the Migratory Bird Treaty Act (MBTA).
2. MBTA provides that and as (*sic*) except as permitted by regulations, it is unlawful by any means or in any manner to kill migratory bird. 16 U.S.C. Section 703. MBTA represents a strong congressional policy that "birds constitute a natural resource of great value for recreational, aesthetic, scientific, and economic purposes." 1972 Convention Preamble, TIAS NO. 7990 (March 4, 1972). Violation of MBTA by unauthorized killing of a single bird is a criminal offense. 16 U.S.C. Section 707. Even unintentional poisoning of migratory birds by spraying of a pesticide has been held to be a criminal violation. *United States v. Corbin Farm Service*, 444 F. Supp. 510, 532-36 (E.D. Cal. 1978), *affd.* 578 F.2d 259 (9th Cir. 1978).



3. While the Draft EIS/EIR does outline mitigation efforts to prevent deaths of wildlife, it does not indicate that the methods will be one hundred percent effective in preventing the deaths of migratory birds. As shown in Appendix C, approximately 45 species of migratory birds are known to visit the east Mojave and be attracted to open ponds of water, such as those that would be built to hold toxic cyanide solution at the Castle Mountain project. The Draft EIS/EIR suggests that not all wildlife deaths will be prevented by the proposed mitigation, but fails to quantify the number that will not be prevented. It also fails to provide specifics on how deaths would be prevented from exposure to solution at the edges of ponds should a floating cover or netting be used, as is suggested by the Draft. Nor does it provide an analysis of expected exposure of migratory birds to the solution on the sides of the heap piles where solution will be sprayed into the air. Nowhere in its analysis does the Draft EIS/EIR provide a discussion of the effectiveness of the netting and drip irrigation methods for avoiding avian mortality.
4. The BLM in Arizona has written, "...merely netting the ponds would not work. We feel that ducks and other birds would still be able to see water through the netting and may become entangled in the netting when attempting to land." July 11, 1988 letter from Yuma Resources Area to Mr. Cary W. Meister.
5. Also, the proposed electrical transmission lines could electrocute migratory birds in violation of MBTA. The Draft EIS/EIR notes that power distribution lines will be designed in accordance with "Suggested Practices for Raptor Protection on Power Lines" (BLM, 1981). There is no discussion of the applicability of these "Suggestions" to the protection of migratory birds, nor their effectiveness for any species. As a result the Draft EIS/EIR fails to provide the necessary assurance that MBTA will not be violated.

#### Response 27

1. It is noted that this comment represents a change in the Commenter's previous opinion on the subject of the effectiveness of netting. The Commenter has previously asserted that "... physical isolation by *nets or covers*... are the only recognized ways to *prevent* the poisoning of migratory birds" (see Appeal of The Wilderness Society re: Mining Plan of Operations N 67-88-009P - U.S. Department of the Interior Board of Land Appeals, April 11, 1989 [emphasis added]).
2. The Applicant and operator will be required to comply with pertinent Federal and State laws, including the MBTA (16 U.S.C. § 703 *et seq.*).

3. The Draft EIS/EIR (pages 6.5-2 and 6.5-3) describes measures that would be incorporated into the project to isolate cyanide processing solutions from wildlife, including fencing, netting, drip irrigation, and solution piping. In addition, the Supplement further describes the concept of solution storage tanks, which has been adopted into the project design plans. It is expected that these physical isolation measures will be adequate to enable the project operations to satisfy the requirements of the MBTA.

#### Comment 28

1. The Draft EIS/EIR fails to demonstrate compliance with the Federal Land Policy and Management Act (FLPMA). The Draft EIS/EIR fails to specify how the proposed project meets the standards set in FLPMA for protection of public lands and the California Desert Conservation Area (CDCA) specifically. There is not detailed discussion of how the project will meet the obligation to prevent unnecessary and undue degradation of public resources. As shown above, it is likely that reclamation will be unsuccessful, this would surely not meet the standard set in FLPMA of preventing undue impairment of resource values within the CDCA.
2. Title V of FLPMA authorizes the Secretary to grant rights of way over, upon, under or through public land for pipelines, transmission of electrical energy, roads, and other corridors. 43 U.S.C. Section 1761(a). Title V and its implementing regulations 43 CFR Section 2800 *et seq.* ("2800 Regulations") require a right of way applicant to submit a plan of construction, operation and rehabilitation for the right of way. 43 U.S.C. Section 1761 (b) (1); 43 CFR Section 2802.3. The Draft EIS/EIR fails to even describe in detail how and where the pipelines, electrical transmission lines, and roads will be constructed, operated, and the land rehabilitated when the facilities are removed. In fact, the Draft indicates that the decision on whether to reclaim the access routes will be left for a later time.
3. Further, Title V and the 2800 Regulations require that each right of way grant contain terms and conditions to minimize damage to scenic and aesthetic values and fish and wildlife habitats. 43 U.S.C. Section 1765(a); 43 CFR Section 2801.2(b). Without these terms and conditions decided and listed a determination of the full extent of the proposed project's impacts cannot be made.



Response 28

1. The Draft EIS/EIR was prepared in compliance with NEPA, CEQA, and their implementing regulations. However, the analyses were completed in full recognition of the need for the Castle Mountain Project to comply with FLPMA (43 U.S.C. § 1701 *et seq.*). The Draft EIS/EIR explained (Section 4.10.1, Land Use Plans and Policies) that:

- "The majority of the land potentially affected by the proposed Castle Mountain Project is Federally owned and is administered by BLM. *Mining operations on open Federal lands are managed pursuant to the General Mining Law of 1872 and the Federal Land Policy and Management Act (FLPMA) of 1976. As a locatable mineral, the mining of gold on open Federal land is authorized by the General Mining Law of 1872 and, therefore, is an activity over which BLM does not have discretionary authority. The Code of Federal Regulations (that implement FLPMA), however, define specific procedural measures and environmental standards that mining operations must comply with to prevent "unnecessary or undue degradation" of Federal lands (43 CFR 3809, Surface Management). In areas where specific statutory authority requires that a stated level of environmental protection or reclamation be attained, such as the California Desert Conservation Area (CDCA), that level of protection must be met. No mining operation under Federal mining regulations can be denied unless it is demonstrated that the operation has not complied with applicable regulations. Certain mining-related activities such as water pipeline and powerline routes outside the area of operation require rights-of-way authorization and must be in the public interest before such activities can be approved"* (Draft EIS/EIR page 4.10-1) (emphasis added).

Determination of whether or not the Proposed Action will meet FLPMA's implementing regulations requirement to prevent unnecessary or undue degradation of public lands is the prerogative of the decision makers in their review of the evidence in the record (including the EIS/EIR). The EIS/EIR has, however, demonstrated that mitigation measures, (including reclamation of disturbed areas) are available to comply with 43 CFR Subpart 3809 criteria. In addition, the Applicant has complied with applicable environmental protection statutes and regulations as exemplified through this environmental review process, in compliance with 43 CFR 3809. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for an explanation of these requirements and their relationship to the 43 CFR 3809 definition of unnecessary or undue degradation.

2. The Draft EIS/EIR recognized that approvals for rights-of-way under Title V of FLPMA (43 U.S.C. § 1761 *et seq.*) will need to be obtained for water lines and power lines. Specific details of the construction, operation, and reclamation of utilities are provided as elements of the description of the Proposed Action in the Draft EIS/EIR (Section 3.2.5, Utilities, Ancillary Structures, Equipment, and Supplies). The Commenter is in error in asserting that "the Draft



EIS/EIR fails to even describe in detail how and where the pipelines, electrical transmission lines and roads will be constructed, operated, and the land rehabilitated when the facilities are removed." The Commenter is referred to the Draft EIS/EIR as follows for discussions on the cited facilities:

- In Section 3.2.5 and as shown in Figure 3.2.9 (Preliminary Utilities Plan), *electrical transmission lines* would extend from the onsite generators to the West Well Field to power water pumps. The onsite overhead lines would be ". . . on wooden poles approximately 30 feet high . . . The power lines to the West Well Field would also be on overhead poles or would be buried in Hart Mine Road, depending upon final design details and requirements of BLM" (page 3.2-27).
  - *Water lines* would extend from the West Well Field to the onsite water tank, as shown in Figure 3.2.9. "Water would be delivered from each well to the main pipeline via a buried pipe in the well access road. The main pipeline would be an 8-inch line buried in the shoulder of Hart Mine Road extended from the West Well Field to the site" (page 3.2-24).
  - The specific lengths, widths, and improvements to the *access roads* are described in Section 3.2.6.2 (Proposed Access). Table 3.2.4 (Proposed Access Improvements), provides a detailed breakdown of the existing status and proposed treatments for each segment of the two access routes.
3. Reclamation of these facilities is addressed in Section 3.2.8 (Reclamation). As described under Phase IV - Final Reclamation, "Aboveground utilities would be removed. Underground lines would be capped and covered . . . water facilities would become the property of BLM." Table 3.2.4 (Proposed Access Improvements), shows that the Applicant would be responsible for reclamation of access route segments that would be upgraded (grade and widen) or new (new road construction). Existing improved access on public land and County roads would not be reclaimed. However, BLM does retain authority for final decisions on access construction and reclamation.
4. The Draft EIS/EIR, therefore, does provide the necessary descriptions of project facilities for the required environmental review. Environmental impacts of the project utilities and access are evaluated in the appropriate sections of Chapter 5.0 (Potential Environmental Impacts). The conditions necessary to minimize damage to scenic and aesthetic values and wildlife habitat (as well as other environmental resources) were provided in the Draft EIS/EIR (Chapter 6.0, Mitigation Measures).

#### Comment 29

1. In other contexts, the Draft EIS/EIR admits that there would be impacts to the desert tortoise and crucial habitat of the desert tortoise. Both proposed access routes cross important habitat



for this sensitive species proposed for listing under both State and Federal endangered species legislation. Title V provides the BLM with the authority to prevent these impacts. This alternative is not considered in the Draft EIS/EIR, but should be.

#### Response 29

1. The Draft EIS/EIR recognized the potential for project traffic to affect the desert tortoise along either the Ivanpah Access Route or the Searchlight Access Route. A detailed analysis of desert tortoise densities and road miles of crucial (Category 1) habitat crossed was therefore included in Sections 5.4 and 5.5 (Wildlife). It was determined that the potential effects of project traffic would be adequately mitigated by the construction of tortoise proof fencing along portions of these access routes, as recommended in the Draft EIS/EIR (pages 6.5-3 and 6.5-4).
2. As a result of the Federal and State listings of the tortoise, and the concern expressed by this Commenter and other commenters on the Draft EIS/EIR, it was decided to relocate the planned access route outside Category 1 habitat. The Applicant therefore purchased property (and grazing privileges) on the Crescent Peak Allotment in Piute Valley, and relocated the planned access from Clark County Road A68p, to the YKL Ranch pipeline service road. The specific improvements and configuration of this revised access, known as the Mitigated Searchlight Access Route were described in the Supplement (Section 3.2.1, Mitigated Searchlight Access Route). The final road configuration is shown in Figure 3.3 of this Final EIS/EIR. This alternative method to mitigate the potential impacts of project traffic on the desert tortoise should therefore satisfy the Commenter's concern for impacts to crucial (Category 1) habitat.

#### Comment 30

1. Conclusion. As demonstrated above, the Draft EIS/EIR does not comply with NEPA, CEQA and implementing regulations. The project itself, moreover, demonstrates the need for reform of the Mining Law of 1872, or at least the BLM's post-FLPMA implementation policies. The site of the proposed mine possesses outstanding scenic, wildlife, wilderness and associated resources -- values that would more than justify an outright prohibition on mineral development were the Bureau both willing *and* able to impose such a prohibition in order to protect and benefit the environment. Despite its inadequacies the Draft EIS/EIR reveals that those values will in fact be degraded if this project goes forward. It also reveals that all adverse impacts have yet to be mitigated as well as that successful reclamation has yet to be assured. Both the Bureau and the County have the authority and the responsibility to demand full mitigation and reclamation. At the very least, they should settle for no less.



Response 30

1. The Commenter's statement that the project "demonstrates the need for reform of the Mining Law of 1872, or at least the BLM's post-implementation policies," is something to which the BLM cannot respond. Statutory changes are clearly within Congress' prerogative. The agency believes that the Draft EIS/EIR, the Supplement, and this Final EIS/EIR fully conform with the requirements of Federal and State law and implementing regulations.
2. Responses to the Commenter's general opinions on the adequacy of the Draft EIS/EIR have been as specific as possible, based upon the broad nature of the comments and the lack of specific data or references to support the comments. While no new specific alternatives or better ways to mitigate the significant effects were suggested by the Commenter, in the interest of informing the public, the responses have been prepared in an attempt to guide the Commenter to the respective portions of the Draft EIS/EIR, Supplement, and this Final EIS/EIR where each concern has been addressed, and to explain the purposes of the Draft EIS/EIR as provided in NEPA and CEQA.



#### 4.3.1.3 NATIVE AMERICANS

Letter 1: The Fort Mojave Indian Tribe





**LETTER 1: THE FORT MOJAVE INDIAN TRIBE****Comment 01**

1. Native American artifacts which we believe belong to the Mojave or Chemehuevi Indians are being removed to repositories which are not acceptable to our tribe. Not addressed is the use of the Fort Mojave Indian Reservation Tribal Repository for final disposition of the artifacts collected from the project area. Native American artifacts removed from the Castle Mountains area may have religious importance to our tribe, thus we are entitled to these artifacts.

**Response 01**

1. Mitigative data recovery efforts for this project have not yet been undertaken. Upon approval of the Final EIS/EIR, the curation of recovered artifacts may be effected through one or more repositories meeting acceptable capability requirements. Objects of religious or sacred value recovered during archaeological investigations will be made available to qualified persons for use in religious or spiritual ceremonies.

**Comment 02**

1. We object to the fact that Native American, particularly Mojave or Chemehuevi, observers are not included in the proposed archaeological data recovery portion of this project. In light of the sacred nature of the Castle Peaks, objects of antiquity collected from the project area may be of religious importance to our tribe.

**Response 02**

1. While Native American observation of data recovery is not specified by statute or regulation, it is the BLM's policy to afford appropriate tribal representatives the opportunity to observe such actions. The Fort Mojave Indian Tribe will therefore be permitted to observe recovery of archaeological resources at such time that a data recovery program is initiated.
2. The Proposed Action is located in the southern Castle Mountains, not in the Castle Peaks. The project site is about seven miles south of the Castle Peaks, which are located in the northern New York Mountains. No impact to the Castle Peaks area is therefore expected from the Proposed Action.



Comment 03

1. Native American concerns regarding the Viceroy Mine project have not been addressed in the EIS. In view of the fact that the Castle Peaks play a large role in Mojave folklore, religion, world view and traditional use, we believe that the BLM has been negligent in assessing negative impacts which development of this area would have upon current Mojave culture and our ability to practice our religion. We believe that it is improper for the BLM to postpone consultation with our tribe until after the EIS is prepared; the public has a right to know about all potential effects of the project including the effect upon Native American concerns.

Response 03

1. See Response No. 02.
2. Public participation is an essential part of the environmental review process. The BLM distributed a news release in May 1988 to solicit public input to define issues for evaluation in the Draft EIS/EIR. Native American values were identified as an issue to be addressed. The Draft EIS/EIR reviewed the proposed project in the context of areas of importance to Native Americans as identified through preparation of the CDCA Plan. This review revealed that no sensitive sites were located within the area of potential effect by this project as stated in the Draft EIS/EIR (page 5.9-5).
3. The Draft EIS/EIR has been circulated for public review of the accuracy and adequacy of the evaluations completed. This is an active process that is not complete until a final decision is rendered. Consultation with the Fort Mojave Indian Tribe and other Native Americans has therefore not been postponed, but is being accomplished in this review according to established procedures under NEPA and CEQA. All additional Native American concerns expressed will become part of the Final EIS/EIR for consideration by the BLM and County.

Comment 04

1. We believe that the visual effects of the proposed project have been down-played in the EIS, especially visual changes which may result to the Castle Peaks as they appear when viewed from Highway 95 east of the project area and from Newberry Mountain--"Avikwame" (Spirit Mountain).
2. Spirit Mountain is the birth place of all Yuman speaking tribes of the Colorado River (much like the Biblical "Garden of Eden") and it is the view of the Castle Peaks from this perspective which is of importance and concern to us. No photographs showing this eastern perspective were

illustrated in the EIS, and yet it is the east side of the mountain which actually looks like a castle. Most people view the Castle Peaks from the east when driving on Highway 95. It is very curious that the firm putting the EIS together for Viceroy, Inc. did not address this issue.

#### Response 04

1. As discussed in Response No. 03, no project activities are proposed in the vicinity of the Castle Peaks.
2. The location of the project in Lanfair Valley is such that views from the east and north from U.S. 95 in Piute Valley would be interrupted by the topography of the southern Castle Mountains, as shown in the Draft EIS/EIR (Figure 5.8.1, Visual Analysis Viewpoints). No visual impact would therefore occur from the eastern perspective in Piute Valley, including views from along U.S. 95.

#### Comment 05

1. Probably of greatest concern to our tribe is the water issue. The EIS does not address the issue to our satisfaction. We cannot be assured by the existing data that the water which drains from Castle Peaks to the Fort Mojave tribal wells and the Colorado River (via Piute Creek, Homer Wash [underground], Klinefleter, then to Sacramento Wash) will not be substantially diminished.

#### Response 05

1. The hydrologic analysis completed for the Draft EIS/EIR (Sections 4.3 and 5.3, Water Resources) determined that the proposed ground water withdrawals would not effect Piute Spring or other Lanfair Valley ground water discharge areas. A program of monitoring will be implemented to confirm the results as actual ground water withdrawals occur, as recommended in the Draft EIS/EIR. This program is further discussed in Section 4.1.5 (Water Resources) of this Final EIS/EIR.





#### 4.3.1.4 RECREATION ORGANIZATIONS

Letter 1: Orcutt Mineral Society



## LETTER 1: ORCUTT MINERAL SOCIETY

Comment 01

1. Paragraph 1.4 subparagraph 3, page 1.1-7. I disagree on the recreational uses described herein. It doesn't describe camping/rockhounding use over more than 10 years by a large number of people.

Response 01

1. Comment noted. It is recognized that camping, rockhounding, hunting, and other specific activities constitute what the Draft EIS/EIR generally describes as recreational uses on public lands.

Comment 02

1. Figure 3.2.3, page 3.2-4. The requirements for the narrow corridor overlapping the Hart Townsite (a historical site) on the northern boundary is not discussed in the text. It would appear that this corridor serves no purpose other than to limit access to the superb camping area adjacent to the north clay pit.

Response 02

1. The configuration of the northern portion of the project site as shown in the Draft EIS/EIR (Figure 3.2.3, Proposed Project Site) is related to the Applicant's mineral claim boundary, it is not related to a physical aspect of the project. As no activities are planned in that area, fencing would not be necessary. Public access to the Hart Townsite would not be restricted.

Comment 03

1. Paragraph 3.2.7.3, page 3.2-45 subparagraph 1. The planned location of security/entry gates should be discussed. Given the allure of highly prized Lattice Agate just north and northwest of the site, potential for conflict exists between security personnel and individuals trying to locate previously open areas.

Response 03

1. The fencing described in the Draft EIS/EIR (page 3.2-45) is planned to surround only the areas necessary for the protection of public safety and wildlife. A security fence may also be located at the intersection of the two access routes between the north heap leach pads (see Draft EIS/EIR Figure 3.2.5, Preliminary Site Plan). Fencing should therefore not restrict access to the offsite areas of interest to the Commenter.





Comment 04

1. Paragraph 4.10.2.4, Recreation, page 4.10-12. This section of the DEIS/EIR should identify and recommended adaptability to the high use of the area by recreational collectors and Lapidaries. Members of rockhound clubs, all members of the California Federation of Mineralogical Societies, from several (at least 10) cities in California, use the area in the cooler months of Spring and Fall. As many as 10 RV's have been camped near the northern clay pit during these periods. It is requested that the recreational use by these many organized clubs over the past years be allowed to continue without excessive restrictions. The availability of choice material for use by the Lapidary hobby is quickly being locked up or depleted by large scale commercial interests. Please don't let that happen here!

Response 04

1. As noted above, the BLM and County recognize that rockhounding is an important recreational activity to a segment of the public. It is not expected that the proposed project would significantly conflict with continuation of this activity in the vicinity of the site.

Comment 05

1. Paragraph 6.10.1.2, Recreation, page 6.10-2. It should be stated that the Applicant will not inhibit a valid multiple use of the area adjacent to the Project Site by amateur mineral collectors through fencing or actions by security officers. No known specimens of interest are known to exist within the site boundaries, therefore access should not be denied to collectors beyond the external boundaries.

Response 05

1. Comment noted. See Response Nos. 03 and 04.

#### 4.3.2 SUPPLEMENT RESPONSES







#### 4.3.2.1 BUSINESS/COMMERCIAL REPRESENTATIVES

Letter 1: Mine & Mill Engineering, Inc.





## LETTER 1: MINE &amp; MILL ENGINEERING, INC.

Comment 01

1. Placement of the desert tortoise on the endangered list - Viceroy Gold Corporation adequately addressed these concerns even before the tortoise was placed on the endangered list on August 4, 1989, by the U.S. Fish and Wildlife Service. The action initiated by Viceroy Gold Corporation in establishing a desert sanctuary and research center in conjunction with the Nature Conservancy has been well-addressed. Such action represents a clear understanding of a very real problem and an honest attempt not at circumventing it, but finding a practical solution. Our involvement on the subject matter is to insure that adequate barriers have been incorporated in the design to prevent egress of these reptiles into potentially hazardous areas. Needless to emphasize, these migratory measures are costly and directly affect project cost sensitivity.

Response 01

1. Comment noted.

Comment 02

1. The use of open ponds for storage of leachate and barren solutions is well-established in the United States and overseas. Obviously, open containment areas especially in the desert would attract birds and various animals in the vicinity of the project site. To prevent this attraction, we are incorporating into the system design large steel tanks, each having a storage capacity in excess of 500,000 gallons. These tanks are completely covered and act as surge diverters to effectively provide the desired degree of "cushion" to absorb fluctuations in plant operational flows. Each pump located at the tank is duplicated in parallel, thereby reducing the possibility of solution flowing into the emergency holding pond in the event of pump breakdown.
2. Construction of these large covered steel tanks is very costly, but will most certainly prevent birds, reptiles, etc. from coming into contact with toxic solutions in them.

Response 02

1. Comment noted.





Comment 03

1. The various alternatives to the Proposed Action have been presented in sufficient depth with respect to the following:

- (a) Alternate location of mine and plant
- (b) Project size
- (c) Rate of mining and processing of ore
- (d) No Action Alternative

Evaluation of these various alternatives (a, b, and c) has demonstrated clearly that the potential project impact on the environment is not necessarily lessened to any significant level.

2. The no action option would be a direct attempt to prevent mining without just cause. Such action would be in direct conflict with current national policy on mineral development in the United States.

Response 03

1. Comment noted.

#### 4.3.2.2 CONSERVATION/ENVIRONMENTAL ORGANIZATIONS

Letter 1: California Native Plant Society

Letter 2: Citizens for Mojave National Park, Inc.

Letter 3: Desert Survivors

Letter 4: National Parks and Conservation Association

Letter 5: Sierra Club, California/Nevada Mining Committee

Letter 6: Sierra Club Legal Defense Fund

Letter 7: Sierra Club, San Geronio Chapter

Letter 8: The Wilderness Society and Natural Resources Defense Council







## LETTER 1: CALIFORNIA NATIVE PLANT SOCIETY

Comment 01

1. The subject Supplement (pages 4-25 to 4-40) outlines in some detail a history of gold use and values in their justification of the project. One concluding statement (page 4-35) made is "Purchases [of gold] from abroad, while logistically feasible, would adversely affect the U.S. balance of trade. Based upon this, and the above considerations, purchasing abroad is not a desirable alternative."
2. The above conclusion would seem to be hypocritical and fraudulent in view of the fact that the Viceroy Gold Corporation is a subsidiary of B&B Mining Company of Canada and the U.S. would in effect be purchasing gold abroad. The United States is probably the only country in the world that would allow a foreign company to mine precious metals--a nonrenewable resource--on public lands *without payment of royalty* and then buy the product from them at the world market rate.

Response 01

1. See Section 4.1.8 (Socioeconomics) of this Final EIS/EIR for a discussion of royalties from hard rock mining.

Comment 02

1. The Federal mining laws are archaic and provide a giveaway of the mineral resources of our public lands. There is no logic in a system that requires payment to extract sand and gravel from public lands, but gold and silver are free for the taking. Coal lands are leased and a royalty paid on every ton mined, but hardrock minerals, like copper [are] a gift. The Federal treasury and taxpayers are cheated, mineral lands are fraudulently acquired, public control of patent lands is lost, and mining is considered the best use of public lands--such a system cries out for reform.

Response 02

1. The Commenter's concern for reform of the Federal mining laws is something to which the BLM cannot respond. Statutory changes are clearly within Congress' prerogative. The Draft EIS/EIR, Supplement, and Final EIS/EIR fully conform to the current requirements of Federal and State law and implementing regulations.



Comment 03

1. One final point. A performance bond should be required prior to approval in view of some past delinquencies by other mining projects. In 1983, in Keynot Canyon, an abandoned mine cost the public \$25,000 to remove rusting drums of cyanide. A bulldozer and other junked equipment remains.

Response 03

1. BLM policy requires bonding for all cyanide heap leach operations on public land. The Draft EIS/EIR discussed bonding requirements in Section 3.2.8.3 (Bonding). Preliminary calculations of reclamation costs that will be used in determining specific bonding amounts are included in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

## LETTER 2: CITIZENS FOR MOJAVE NATIONAL PARK, INC.

Comment 01

1. Below are our comments on the Supplement to the Draft EIS on the proposed Castle Mountain project. After a thorough review of this document, we can find no reason to change our recommendation of the "no project" alternative. We are disappointed there is no detailed failsafe reclamation plan in this document.

Response 01

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval.
2. The Commenter's specific concern regarding a *failsafe reclamation plan* is not understood. Reclamation would be completed to the satisfaction of the BLM and County and ensured through bonding. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for a further discussion of bonding.

Comment 02

1. We continue to object to the cover of the documents with the 1907 nineteenth century prospectors and burros. This is a totally misleading view of the holocaust destruction that Viceroy envisions, just as the Colosseum holocaust has sadly proved to be. We're not talking pick and shovel in the destruction planned in this document, but giant earthkilling machines.

Response 02

1. The cover photograph used on the environmental documents prepared for the Castle Mountain Project is not intended to mislead the Commenter: burros are no longer used for mining in the Hart Mining District. The photograph depicting the original discoverers of the Hart Mining District gold deposits is shown for its historic interest and indicates the long-standing history of mining in this area.

Comment 03

1. We object to the opening statement on page 4-25, "There is no public use contemplated for the project site....." Of course, there is a public use for the site. These public lands have been planned for use in the East Mojave National Scenic Area. And because BLM has such little regard for the public and is jerked around like a puppet by mining interests such as Viceroy, Congress is presently considering the public use for the area as part of the proposed Mojave





National Park. Viceroy's plan for strip mining the area and poisoning it with cyanide and killing wildlife is a retarded nineteenth century idea whose goal is private greed. The Mojave National Park idea is a twenty-first century idea whose goal is public good.

#### Response 03

1. The Commenter's quotation has been taken out of the context of the Supplement (Section 4.5.3, Site Withdrawal or Condemnation). Both the Draft EIS/EIR and Supplement recognized the location of the project site within the EMNSA and the area's multiple use. However, the purpose of the cited statement was to explain that there is no known alternate single public use of this site that is contemplated by another agency of the Federal government for which Congress would appropriate funds for land condemnation.
2. See Section 4.1.6 (Wildlife) of this Final EIS/EIR regarding cyanide use and wildlife protection.
3. See Section 4.1.7 (Land Use) of this Final EIS/EIR regarding the proposed national park and project compatibility with the EMNSA.
4. The proposed project is an open pit mine, not a strip mine.

#### Comment 04

1. This Supplement does not propose any serious mitigations to the project's problems. What Viceroy plans to do for the tortoise in Nevada has no impact on mitigating wildlife impacts in EMNSA, the area of proposed destruction. The only possible tortoise mitigation in EMNSA would be for Viceroy to purchase the 22 private sections (14,080 acres) in Ivanpah and Fenner Valleys and donate them to BLM. These are mostly high priority acquisition sections which the EMNSA plan of 1988 proposes for BLM acquisition. Now that would be a significant wildlife mitigation.

#### Response 04

1. The Draft EIS/EIR (Section 5.5, Wildlife) demonstrated that the potential impacts of this project on the desert tortoise could be mitigated below a level of significance. The Supplement (Section 3.1.1.4, Habitat Compensation), in discussing the formal consultation undertaken by BLM with FWS pursuant to the Endangered Species Act (16 U.S.C. §1531) mentioned that FWS was considering several forms of compensation for habitat disturbance, including "land acquisition in Piute Valley Category 1 habitat" (Supplement, page 3-6). While it was

recognized by BLM that this Nevada habitat is not located in the EMNSA, it was also recognized that the Piute Valley habitat is important desert tortoise habitat. Since the goal of compensation would be to benefit the species, not to benefit a political unit such as the EMNSA, such compensation is appropriate.

2. The Commenters opinion on compensation is noted. The FWS Biological Opinion is included in Appendix G of this Final EIS/EIR for informational purposes on the final FWS recommendation of appropriate compensation. The FWS has stipulated that BLM require the Applicant to eliminate all grazing on the 50,000 acres which comprise Pastures 4 and 5 of the Crescent Peak Allotment (all of which is in Piute Valley) or acquire 745 acres of desert tortoise habitat within the Category 1 habitat of the eastern Mojave.

#### Comment 05

1. The Supplement fails to address the problem of water and the problem of the possible overdrafting of Piute Creek. We have entered the fourth year of a severe drought and cannot put Piute Creek's water supply at risk. Once this creek's underground water sources in Lanfair Valley dry up, there may not be any putting this back again. Nature is not some piece of furniture to be manipulated. The talk about a backup pipeline to Piute Creek from a man-made well is absurd.

#### Response 05

1. The Supplement was not intended to set forth additional analysis of the potential effects on Piute Creek; that issue was evaluated in the Draft EIS/EIR (Section 5.3, Water Resources).
2. It is noted that, although precipitation has been lower than average in recent years, Piute Spring flow has remained relatively constant (see Draft EIS/EIR Table 4.3.1, Piute Spring Monthly Monitoring). This implies that Piute Spring is not significantly influenced by short-term fluctuations. The predicted aquifer fluctuations from the Castle Mountain Project withdrawals are likewise not expected to significantly affect Piute Spring (see Section 5.3, Water Resources).
3. For a discussion on the Commenter's reference to a potential pipeline to provide water to Piute Spring, see Section 4.1.5 (Water Resources) of this Final EIS/EIR. *Note: For the benefit other readers, it should be explained that in response to a request from the Sierra Club Legal*



*Defense Fund (representing themselves, the Wilderness Society and Natural Resources Defense Council, and Desert Survivors), the feasibility of providing water from the West Well Field to Piute Spring was examined (see Mark Group, 1990 for further information).*

#### Comment 06

1. The proposed project is an all-out total assault on the integrity of the East Mojave National Scenic Area. Viceroy proposes dismemberment of part of a National Scenic Area. The BLM appears to be a helpless steward. In their reclamation plan we want Viceroy to achieve the maximum amount possible of revegetation of disturbed soils before their bond is released. The 90 percent required by SMARA at the end of a 10 year period seems reasonable.

#### Response 06

1. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of project compatibility with the EMNSA.
2. The intent of the revegetation element of project reclamation is to achieve the maximum amount of revegetation possible. The Draft EIS/EIR (page 3.2-49) recommended that a site specific revegetation research program be undertaken so that implementation of revegetation procedures would produce the best possible results in the least amount of time. SMARA does not require a specific percentage of revegetation or a specific time period.
3. Criteria for release of bonding is not within the scope of an EIS under NEPA or an EIR under CEQA. Bond release criteria will be set forth in the Conditions of Approval and will be available for public review at the BLM and County offices listed on the cover page of this Final EIS/EIR.

#### Comment 07

1. Our first preference is that Viceroy quit, go back home to Canada, and plan other manipulations on the Vancouver Stock Exchange. Our last preference is that BLM administer the proposed project under the standards of the Mining in the Parks Act, make sure that all water sources are taken outside EMNSA, have a closed failsafe cyanide system enclosed completely in metal, have no open ponds whatever, have a sufficient enforced bond to ensure reclamation, backfilling, restoration to high quality scenic standards, and Viceroy acquire some 14,080 acres of crucial tortoise habitat in Ivanpah and Fenner Valleys for wildlife mitigation. No other alternatives are acceptable.



2. There has been nothing in any of Viceroy's documents to date that have given us any assurance that the proposed project is anything but an environmental disaster of the worst kind. We offer these comments in the hope that the Final EIS will finally address the issues we have raised.

Response 07

1. See Response Nos. 02, 03, and 04.
2. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of opinions on project approval.
3. The applicable Federal regulations for this area are contained in 45 CFR Section 3809, not in the Mining in the Parks Act or the national park regulations (16 U.S.C. §1901 *et seq.*).
4. The Applicant has adopted a solution containment system using metal tanks, as described in Section 3.1 (Final Project Design) of this Final EIS/EIR.
5. Appropriate bonding will be required to ensure adequate reclamation, as discussed in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.



### LETTER 3: DESERT SURVIVORS

#### Comment 01

1. These comments are submitted on behalf of Desert Survivors, a California nonprofit conservation group, and address the Supplement to the Draft Environmental Impact Statement for the Castle Mountain Project (January, 1990) ("Draft EIS Supplement"). The Draft EIS Supplement has the same defects as we noted in our comments on the Draft EIS.
2. First, no analysis of substance is provided about backfilling the pits as a reclamation measure. The conclusory treatment of this issue is inexcusable given the emphasis that we and others have placed on backfilling as an alternative.

#### Response 01

1. The Supplement was not intended to respond in detail to comments received on the Draft EIS/EIR. Responses to the comments of the Desert Survivors on the Draft EIS/EIR can be found in Section 4.3.1.2 (Letter 4: Desert Survivors) of this Final EIS/EIR.
2. The Draft EIS/EIR included an evaluation of the potential benefits of backfilling in Section 3.3.1.2 (Alternative Overburden and Processed Ore Disposal). Additional clarification on this issue is provided in Section 3.3 (Alternative Mitigation Measures Considered) of this Final EIS/EIR.

#### Comment 02

1. Another failing of the Draft EIS Supplement is that it fails to set forth a specific reclamation plan. We believe that this omission violates NEPA and its implementing regulations. We need to know in full detail what the operator intends to do to reclaim this massive project upon completion of the operations.

#### Response 02

1. Neither NEPA nor CEQA requires that the reclamation plan filed by the Applicant be actually included in the Draft EIS/EIR. It is only necessary to include enough detail in the environmental document that the project can be evaluated for its potential environmental consequences. The Draft EIS/EIR (Section 3.2.8, Reclamation) devoted several pages to a detailed description of the reclamation plan as appropriate for its evaluation therein. The original reclamation plan (as referenced on Draft EIS/EIR page 2.1-1), and its revision, are on file and available for public review at locations listed in the User's Guide.

Comment 03

1. Furthermore, the Draft EIS Supplement perpetuates the deliberate silence about the impact of this project on the proposal pending before Congress to create an East Mojave National Park. It is inexcusable that this issue is ignored completely. We believe that the drafters may have a hidden political agenda that they feel would be compromised by acknowledging the pending legislation.

Response 03

1. The environmental review process mandated by NEPA and CEQA is intended to provide a full disclosure of the available facts surrounding the potential environmental consequences of a Proposed Action; it is not intended to engage in speculation on political issues. Nevertheless, Section 4.1.7 (Land Use) of this Final EIS/EIR has been prepared to satisfy the Commenter's request for information on the proposed national park.

Comment 04

1. Finally, one specific measure that we would like to see adopted is the use of solution storage tanks, as suggested in the Draft EIS Supplement.

Response 04

1. Comment noted. Use of storage tanks has been adopted as the preferred design for solution storage, as discussed in Section 3.1 (Final Project Design) of this Final EIS/EIR.

Comment 05

1. We appreciate what we perceive to be good faith efforts by the operator and the BLM to address many of the issues raised by this project, but it is not acceptable to sidestep the three major issues raised above. We recognize that backfilling, the park proposal and a reclamation plan are difficult and sensitive topics. It is precisely because of this, however, that the Draft EIS and Draft EIS Supplement are inadequate and, in our view, do not provide sufficient environmental review on which to approve the project.

Response 05

1. The topics of backfilling, park proposal, and reclamation are not considered difficult or sensitive, from the perspective of an environmental analysis. As indicated above, each of these issues has been given full and timely consideration in the environmental review process completed for the Castle Mountain Project.



2. For further information on backfilling, see Sections 3.3 (Alternative Mitigation Measures Considered) and 4.1.4.1 (Mine Pit Backfilling) of this Final EIS/EIR.
3. For further information on the park proposal, see Section 4.1.7 (Land Use) of this Final EIS/EIR.
4. See Section 1.5 (Final Reclamation Plan) of this Final EIS/EIR regarding the contents of the final reclamation plan and its availability for public review and comment.

## LETTER 4: NATIONAL PARKS AND CONSERVATION ASSOCIATION

### Comment 01

1. We, first, want to strongly commend Viceroy Gold Corporation's plan to abandon and rehabilitate the road leading directly from Searchlight, Nevada, to the mine site; and to access, instead, by way of a route--the "mitigation alignment"--that greatly reduces the risk of impairment to the desert tortoise.
2. We would only question whether the southern half of the mitigation alignment must follow so far up on the side of Piute Valley; is there possibly another existing ranch road farther downslope? The reason for asking is that roads constructed up on slopes (alluvial fans and bajadas) in the desert tend to interfere with natural surface water flows. Such interference could be considerably more environmentally disruptive than aligning the road lower downslope where there is a lower gradient. If there is no alternative road, then we would urge that the mitigation alignment be built so as to interfere as little as possible with water flows. Culverts and small underpasses could help alleviate this problem considerably.

### Response 01

1. Comment noted. The final alignment of the Mitigated Access Route, as recommended by the FWS in its Biological Opinion (see Appendix G), does follow an existing YKL Ranch pipeline maintenance road on lower slopes. See Section 3.1 (Final Project Design) of this Final EIS/EIR for a further discussion of this final access route alignment.

### Comment 02

1. Second, we want to express our strong support for Viceroy's proposal to utilize closed steel tanks, rather than open lined ponds, for containment of the leach solution. This should eliminate concerns over the potential for wildlife mortality.

### Response 02

1. Comment noted.

### Comment 03

1. Third, we are very pleased to see the provision for a Mitigation Monitoring Program that can keep the company, the BLM, and the interested public well-informed as to the status and effectiveness of the Project's mitigation actions.

Response 03

1. Comment noted.

Comment 04

1. We should also say that National Parks and Conservation Association is greatly appreciative of the fact that Viceroy has acquired the YKL Ranch in Nevada, so that the present road from Searchlight can be abandoned/rehabilitated and the mitigation alignment utilized instead, and so ultimately the ranch facilities can become a center for the interpretation and research of the desert tortoise. We commend all those who have had a part in making this possible.
2. Finally, we want to praise Viceroy for being willing to sit down with representatives of the environmental community and negotiate solutions to environmental problems. This is an outstanding effort--one that sets a wonderful example for the mining industry.

Response 04

1. Comment noted.





## LETTER 5: SIERRA CLUB, CALIFORNIA/NEVADA MINING COMMITTEE

Comment 01

1. As the Chair of the Sierra Club California/Nevada Mining Committee, I was privileged to be in attendance at one of the meetings with the Sierra Club Legal Defense Fund, Viceroy, and BLM. As a result of this negotiation process, I believe the project has come a long way, environmentally, from the initial proposal. On outstanding issues, I totally endorse the policy of Deborah Reames, SCLDF attorney. This includes, but is not limited to, the proposals for the access route and onsite and offsite tortoise mitigation as outlined in the SCLDF letter to Elena Daly, BLM Needles, dated March 2, 1990.

Response 01

1. Comment noted. See Section 4.3.1.2 (Letter 8: Sierra Club Legal Defense Fund) of this Final EIS/EIR for responses to SCLDF comments.

Comment 02

1. The other issues of concern to us are Piute Creek and onsite reclamation. Finally and definitively, I am not willing to trust the existence of Piute Creek into the indefinite future to computer modeling based on insufficient geologic information and site specific experience. I am also opposed to any mitigation plan in the event Piute Creek dries up as a result of this project, as no adequate mitigation is possible. Therefore, the final operating plan must include provisions for monitoring as discussed in the negotiating meetings, and also must include positive provisions for notifying the public of drawdowns in excess of those predicted by the computer modeling, and if these are more than 10 percent in excess of predictions the wells must be shut down until the computer models are revised and show no negative impact on Piute Creek will result if pumping is resumed, from now into the indefinite future, and the EIS/EIR is revised to reflect the new information. Piute Creek is an Area of Critical Environmental Concern, after all, and the reason is that this area is almost the by far the most important riparian area in the East Mojave. It cannot be endangered for short-term economic gain.

Response 02

1. Comment noted. The suggested hydrologic monitoring and contingency activities are discussed in Section 4.1.5 (Water Resources) of this Final EIS/EIR.



Comment 03

1. The other issue of most concern to me (but not to minimize the importance of other issues) is the eventual appearance of the area after it is mined out. Of first importance is a reclamation bond of adequate size to ensure that reclamation takes place, even if the price of gold goes down or Viceroy goes broke. However, it would be appropriate for the bond to be adjusted to reflect concurrent reclamation. There also should be specific plans for recontouring, preferably in consultation with a landscape architect, and specific requirements for vegetative composition (same species and mix as presently exists) and cover (at least 75 percent of the original). More information is also needed on the feasibility and cost of backfilling at least some of the pits before this option is discarded, as backfilling would reduce the amount of waste to be reclaimed as well as improving the eventual appearance of the area. We also recognize and approve of the reclamation of the previous clay operations as proposed by Viceroy and recognize their positive environmental value.

Response 03

1. The Draft EIS/EIR (Section 3.2.8.3, Bonding) recommendations for bonding are further discussed in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR. As suggested, bonding will be required in a sufficient amount to ensure reclamation to the satisfaction of the BLM and County.
2. The Draft EIS/EIR (page 3.2-51) recommended that reclamation include special contouring.
3. The revegetation program recommended in the Draft EIS/EIR (Section 3.2.8.2, Reclamation Plan) will determine specific and realistic goals for recovery through onsite experimentation.
4. See Section 3.3.1.2 (Castle Mountain Project Backfilling Constraints and Opportunities) of this Final EIS/EIR for additional discussion of mine pit backfilling feasibility and cost considerations.

Comment 04

1. We trust that the progress that has been made will be confirmed in the Final EIS/EIR and the final operating plans, and that our concerns will be fully addressed. On balance, we would still prefer no mine at all, but if Piute Creek is finally and absolutely protected, and if reclamation/mitigation as presently envisioned occurs, there will at least be some positive environmental benefit from such a massive intrusion into a very sensitive area.

Response 04

1. The concerns of the Commenter have been fully addressed in the appropriate sections of the Draft EIS/EIR Supplement and this Final EIS/EIR, as indicated above.
2. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval.





## LETTER 6: SIERRA CLUB LEGAL DEFENSE FUND

Comment 01

1. *Access Route* - The Wilderness Society, Sierra Club, Desert Survivors, and NRDC (but not any longer Citizens for an East Mojave National Park) all oppose the use of the "Mitigated Searchlight Access Route" as proposed in the Supplemental Draft EIS. A new road will only further promote ORV [off-road recreational vehicle] activity in this area, already a problem with significant impact on the desert tortoise, and will most likely result in destruction downslope to tortoise habitat through erosion caused by the construction and use of the new road.
2. Instead, my clients propose a variation on this route whereby the new road delineated on DEIS Figure 3.3 as Segment A would be rerouted along the existing roadway running from the corral past the water tank to State Route 164 (see enclosed map).<sup>(1)</sup>
3. Drs. Wilshire and Stebbins both favor this proposal, and it was my impression that Drs. Berry and Brattstrom also spoke in favor of it at our December 8, meeting in Sacramento. I have spoken with Chris Mitchell and Bob Thompson, who inform me that Viceroy has no objection to this route; indeed, they favor the improvement of an existing road over new road construction.

Response 01

1. Comment noted. The requested modification to the Mitigated Access Route has been accepted as the preferred access alignment, as shown in Figure 3.3 of this Final EIS/EIR.

Comment 02

1. *Onsite Tortoise Mitigation* - My clients would like an explanation as to why the heap leach pads are sited in the very area where tortoise activity is evident, together with a rational rationale as to why they should be not resited.
2. With regard to the tortoises found onsite, Dr. Stebbins has recommended to us that they be moved to some location outside the tortoise-impermeable fencing, but radio-tagged and monitored to determine their response to the move. We would like to see a plan for this move

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<sup>(1)</sup> The Commenter's map is included in Appendix E of this Final EIS/EIR.

and the monitoring, which we assume will be conducted by Lynn Pirozzoli. We would also like to know when in this process the fence will be constructed: prior to other surface-disturbing activity in the area?

3. Kristin Berry raised a concern at our December meeting as to how the fence design will be modified to prevent access by tortoises along washes or roadways. How have you responded to this concern?

#### Response 02

1. Based upon the detailed onsite inventories completed for the desert tortoise, sign indicative of tortoise activity is virtually nonexistent, which is to be expected, considering the location and elevation of the project site. As indicated in Figure 4.6 of this Final EIS/EIR, there are five possible tortoise burrows onsite, all located in the banks of dry washes. The planned locations of the heap leach pads would not affect these burrows. None of these potential burrows were occupied when they were inspected in March, 1990 during the tortoise hibernating period, and no tortoise signs were observed. Tortoise relocation and radio-tagging is therefore not required.
2. The reasons for arrangement of project facilities (including the heap leach pads) was explained on page 3.2-7 of the Draft EIS/EIR. The heap leach pad locations were planned primarily with consideration to operational requirements (grading and drainage) and visual resources. Operational requirements necessitated an appropriately large area with gentle slope that was sited relatively near to the mine pits and crushing area. Visual resource considerations dictated that the pads be located in a relatively flat area where the straight line profile would fit the surrounding terrain. Both of these considerations contributed to a decision to locate the heap leach pads as shown in Draft EIS/EIR (Figure 3.2.5, Preliminary Site Plan) on the floor of Lanfair Valley. As there appears to be no significant conflict between the planned heap leach pad locations and the desert tortoise, resiting these facilities is considered unnecessary.
3. While the detailed onsite inventories have not revealed the presence of the desert tortoise, occasional tortoises are expected in the vicinity. FWS has therefore required that tortoise-proof fencing be constructed surrounding surface-disturbing activities on the lower elevations of the project site prior to their initiation (see Appendix G for FWS requirements). The fencing will be appropriately designed and constructed to discourage tortoise access to the site along washes and roads. The tortoise-proof fencing is shown in Figure 3.1 of this Final EIS/EIR.



Comment 03

1. *Offsite Tortoise Mitigation* - My clients appreciate Viceroy's commitment to closure and reclamation of Clark County Road A68p. However, they remain in adamant opposition to the current tortoise habitat compensation proposals.
2. First and foremost, all habitat enhancement or acquisition should take place *within the East Mojave National Scenic Area*, and certainly not in Nevada. A far more appropriate proposal would be the acquisition of lands in prime tortoise habitat in Fenner or Ivanpah Valleys, already slated for eventual purchase by BLM.
3. Additionally, my clients object to habitat compensation mitigation monies going to ill-defined, substantially unfunded "studies" which have not been the subject of peer review. Even if a study is needed to determine the negative impacts of grazing on tortoises, and my clients question this need, both the most desirable *location* and *structure* of such a study should be subject to considerable scrutiny -- as has not occurred in this case.

Response 03

1. Several methods of providing compensation for tortoise habitat disturbance were recommended to FWS by BLM for their consideration in formulating a Biological Opinion on the Castle Mountain Project effects pursuant to Section 7 of the Endangered Species Act (16 U.S.C. § 1531 *et seq.*). Although this formal consultation between FWS and BLM is a separate process and not part of the EIS/EIR, the Supplement provided an explanation of the compensation considerations being evaluated by FWS.
2. The Draft EIS/EIR (Section 5.5, Wildlife) demonstrated that the potential impacts of this project on the desert tortoise could be mitigated below a level of significance. The Supplement (Section 3.1.1.4, Habitat Compensation), in discussing the formal consultation undertaken by BLM with FWS pursuant to the Endangered Species Act, mentioned that FWS was considering several forms of compensation for habitat disturbance, including "land acquisition in Piute Valley Category 1 habitat" (Supplement, page 3-6). While it was recognized by BLM that this Nevada habitat is not located in the EMNSA, it was also recognized that the Piute Valley habitat is important desert tortoise habitat. Since the goal of compensation would be to benefit the species, not to benefit a political unit such as the EMNSA, such compensation is appropriate.



3. The Commenter's opinions on the desired forms of compensation are recognized. FWS has issued their Biological Opinion on this subject based upon review of the best available data; the document is included in Appendix G. The FWS has stipulated that BLM require the Applicant to eliminate all grazing on the 50,000 acres which comprise Pastures 4 and 5 of the Crescent Peak Allotment (all of which is in Piute Valley) or acquire 745 acres of desert tortoise habitat within the Category 1 habitat of the eastern Mojave.

#### Comment 04

1. Accordingly, my clients request that BLM authorize the Mitigated Searchlight Access Route with the realignment of Segment A suggested in the attached map; relocate or explain a decision not to relocate the heap leach pads away from desert tortoise activity; determine to radio-tag all tortoises found onsite and remove offsite all tortoises and require a monitoring plan for such tortoises; provide information regarding measures to be taken to prevent tortoises from entering the site through washes and roadways; and require as habitat compensation the acquisition of tortoise habitat within the East Mojave National Scenic Area.

#### Response 04

1. Comments noted. See above Response Nos. 01, 02, and 03.

## LETTER 7: SIERRA CLUB, SAN GORGONIO CHAPTER

Comment 01

1. Desert tortoises are still affected by the project. The Ivanpah access route still passes through high-density tortoise habitat, no matter how you look at it. Increased vehicular traffic here means increased fatalities of tortoises and other wildlife. Also, there is a growing body of research indicating that the long-term preservation of the species is dependent on the protection of large blocks of prime habitat with restricted human access (and thus, diminished human impacts). Roads cause habitat fragmentation (a problem that is made worse by fences designed to reduce roadkills) and act as foci for non-native weed invasion. The east Mojave presents us with some of the last remaining blocks of desert tortoise habitat.

Response 01

1. As stated in the Supplement (page 3-9):

"The Draft EIS/EIR indicated that while the majority of project traffic would use the Searchlight Access Route, some deliveries of equipment and supplies would reach the site via the Ivanpah Access Route. This concept has been revised with the formulation of the Mitigated Searchlight Access Route alignment to direct all project deliveries as well as employee bus/van pools to use this alignment. As a result, no project traffic would be directed through the Ivanpah Valley Category 1 desert tortoise habitat."

Project traffic would not affect tortoises along the Ivanpah Access Route.

Comment 02

1. Despite the Applicant's claims to the contrary, there is real reason to believe that the project's water needs will adversely affect the surface flow from Piute Spring. As this creek is the most important water source for wildlife in the east Mojave, any reductions would be devastating.

Response 02

1. As part of their investigation of the potential environmental impacts of the Proposed Action, the BLM and County required that an independent evaluation of the potential effects of the Proposed Action on Piute Spring be prepared. The results, as presented in the Draft EIS/EIR (Sections 4.3 and 5.3, Water Resources) indicate that the proposed ground water withdrawals would not affect Piute Spring flow.

Comment 03

1. The project will give us a huge scar in the east Mojave landscape. The proposed restoration measures are superficial at best. In fact, it is questionable that there really are effective restoration methods in existence. The delicate soil structure of the desert is easily disturbed, and cannot be reinstated by simply pushing the rubble back into the hole. However, the Applicant does not even intend to do this much. The pit will remain our gift forever.
2. In view of these problems, I consider the Castle Mountain Project to remain an inappropriate development in the East Mojave Scenic Area, and support the No Action Alternative only.

Response 03

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of project approval.
2. See Sections 3.3 (Alternative Mitigation Measures Considered) and 4.1.4.1 (Mine Pit Backfilling) of this Final EIS/EIR for discussions on backfilling.
3. See Section 4.1.4 (Reclamation) of this Final EIS/EIR regarding Federal and State reclamation requirements and the concept of restoration.



LETTER 8: THE WILDERNESS SOCIETY AND NATURAL RESOURCES  
DEFENSE COUNCIL

Comment 01

1. We are disappointed that the DSEIS/EIR fails to adequately remedy the inadequacies of the Draft EIS/EIR raised by the public and responding public agencies in prior comments. In your letter of December 29, 1989, accompanying the DSEIS/EIR, you state that the purpose of the DSEIS/EIR is to ". . . provide the most current information of the probable environmental and social impacts that would result from the . . . [project] and the most up-to-date plans for environmental mitigation." Alas, the information provided still leaves too many unanswered questions. In particular, many of the project's impacts have yet to be disclosed.
2. Based on the information currently provided, there will be undue and unnecessary environmental impacts from the project. In preparing the Final Supplemental EIS/EIR (FSEIS/EIR) you must thoroughly and rigorously evaluate and consider the issues raised in prior comments and those presented below. Until the necessary information and analysis are provided, neither the public nor any public agency, including especially, the Bureau of Land Management, will be able to make an informed decision about the project. In addition, because essential information is missing, the environmental documentation as a whole continues to violate both the National Environmental Policy Act (NEPA), 42 U.S.C. Sec. 4321 *et seq.*, and the California Environmental Quality Act (CEQA), Cal. Pub. Res. Code Secs. 21000 *et seq.*

Response 01

1. The Supplement was not intended to respond in detail to all the comments received on the Draft EIS/EIR. Response to the comments of The Wilderness Society and Natural Resources Defense Council on the Draft EIS/EIR can be found in Section 4.3.1.2, Letter 11, of this Final EIS/EIR.
2. Each significant comment raised on the Draft EIS/EIR and Supplement has been evaluated and addressed in this Final EIS/EIR. This document, therefore, does contain the necessary information to permit the BLM and County to make an informed decision on the discretionary entitlements being requested.

Comment 02

1. *Continued failure to comply with NEPA/CEQA and other laws.* The documentation continues to fail to comply with NEPA and CEQA for several reasons. First, it fails to consider several reasonable alternatives. Also, it still ignores or defers consideration of significant environmental impacts. It also fails to provide essential information about the project including a quantitative presentation of the likely economic costs and benefits of the project and a specific reclamation plan. A specific reclamation plan that is technologically and economically feasible must be completed before any decision maker can assess the environmental impacts of the project. Until such a plan and the opportunity for public comment are provided, the project would not comply with environmental full disclosure laws and the Surface Mining And Reclamation Act of 1975 (SMARA), Cal. Pub. Res. Code Sec. 2710 *et seq.*

Response 02

1. Neither CEQA nor NEPA require that an EIS/EIR contain a cost-benefit analysis (see 14 CCR § 15131 and 40 CFR Section 1502.23).
2. See Response No. 16 below, regarding reclamation.

Comment 03

1. *The DSEIS/EIR continues to fail to discuss a meaningful range of alternatives.* Viceroy (the project proponent) has indicated privately that it is considering some additional modifications to the project. However, these proposals are conspicuously absent in the discussion and evaluation of alternatives in the DSEIS/EIR. The DSEIS/EIR fails to evaluate any alternatives which use enclosed tanks, or which include specific hydrological monitoring or contingency plans; all necessary to ensure adequate protection of the area's water resources. Furthermore, none of the NEPA/CEQA documents to date have included a public disclosure and discussion of specific mitigations and legal considerations necessary to comply with the Endangered Species Act regarding the desert tortoise. Merely discussing these in the Biological Assessment is insufficient. For an adequate assessment of the project these mitigations and alternatives must be clearly displayed along with the associated costs. The DSEIS/EIR is the appropriate vehicle for discussion and proper public disclosure of these critical issues.



Response 03

1. The Draft EIS/EIR and Supplement consider a range of alternatives consistent with requirements that alternatives be feasible, viable, and practicable. Modifications to the Proposed Action were discussed and evaluated for potential environmental consequences in the Supplement, (Section 3.2, Changes in the Proposed Action). Final conceptual design considerations for solution storage were discussed in Section 3.2.2 (Solution Storage). The alternative design for use of steel storage tanks, instead of ponds, was identified in Section 3.2.2.1 (Modified Solution Storage Design). As stated in the Supplement, "Use of either of these modified solution storage designs would perform the same function as measures identified in the Draft EIS/EIR for the protection of wildlife" (page 3-28). Use of steel tanks has been adopted and is the preferred method of solution storage for this project and is discussed in Section 3.1 (Final Project Design) of this Final EIS/EIR.
2. The Draft EIS/EIR (Section 6.3, Water Resources) did recommend that a program of hydrologic monitoring be completed during the project to evaluate aquifer response and confirm the predicted drawdown. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for additional specificity on this mitigation measure.
3. Both the Draft EIS/EIR and Supplement have included a public disclosure and discussion of specific mitigations and legal considerations necessary to comply with the Endangered Species Act regarding the desert tortoise and have recognized the status of the desert tortoise and its legal protection. The Draft EIS/EIR provided a summary of the applicability of the Federal Endangered Species Act (16 U.S.C. § 1531 *et seq.*) in Section 2.4 (Regulatory Compliance). Specific mitigation measures for the desert tortoise were detailed in the Draft EIS/EIR (Section 6.5, Wildlife). The Supplement (Section 3.1.1.4, Habitat Compensation) provided additional considerations for habitat compensation subsequent to the State and Federal listings. Therefore, available data with respect to the tortoise has been disclosed to the public. The same desert tortoise data in the Draft EIS/EIR and Supplement was provided to FWS for their review as a Biological Assessment document. The FWS Biological Opinion, provided in Appendix G of this Final EIS/EIR, was therefore based upon the same information that has been made available to the Commenter. Neither NEPA nor CEQA require evaluation of the costs associated with required mitigation measures.



Comment 04

1. In particular, one important alternative that is not specifically evaluated is the use of enclosed tanks. This technology is discussed, but not included in the alternatives analysis. The use of tanks is essential to provide a minimally adequate level of protection to wildlife and water quality, and would be advisable to ensure compliance with the Migratory Bird Treaty Act.

Response 04

1. See Response No. 03. Steel tanks have been adopted as part of the Proposed Action.

Comment 05

1. Another alternative that should be examined in the FSEIS/EIR is the use of the existing pipeline service road on the YKL Ranch beginning at State Highway 164. The DSEIS/EIR presents the construction of a 4.3 mile segment of new road, as a mitigation measure. Construction of a new road through desert tortoise habitat is not a mitigation measure. Instead this road should be evaluated as a separate alternative with full disclosure of its environmental impacts.
2. We are opposed to the Proposed Searchlight Access Route as described on page 3-9. Most of the damage to tortoise habitat has already been done in constructing the existing pipeline service road. Building a new road will only serve to further fragment wildlife habitat and invite additional off road vehicle impacts. The use of fences needs to be fully explored along with the use of the existing road as an alternative to avoid additional impacts to tortoise habitat, soils, and vegetation. The FSEIS/EIR needs to evaluate this alternative and also provide the information necessary to compare it with the proposed alternative.

Response 05

1. The Supplement presented a revised alignment for the access route based upon comments received on the Draft EIS/EIR (including those of The Wilderness Society and Natural Resources Defense Council, as shown in Section 4.3.1.2, Letter 11, [Comment and Response No. 29] of this Final EIS/EIR). The purpose of the revised alignment was specifically to avoid traffic through Category 1 desert tortoise habitat, including construction of the 4.3 mile road segment. However, based upon the BLM inventory of tortoises in that area (indicating very low densities), as shown in the Supplement (Figure 3.5, Northern Piute Valley Desert Tortoise Population Densities), the new road construction was determined to be unnecessary and desert tortoise fencing is not recommended.

2. See Section 3.1 (Final Project Design) of this Final EIS/EIR for a discussion of the final preferred alignment of the Mitigated Searchlight Access Route. Use of the existing YKL Ranch Road, as recommended by the Commenter, has been adopted as part of the Proposed Action.

#### Comment 06

1. The DSEIS/EIR considers four alternatives in some detail, though no economic figures are cited, making comparison between them on this key parameter impossible. Moreover, the DSEIS/EIR fails to consider any combinations of these four. One combination that appears to offer less environmental impacts is the Reduced Project - Faster Processing Alternative. In dismissing the Faster Processing Alternative, the DSEIS/EIR relies on several unsupported assumptions. The FSEIS/EIR must provide information to support the conclusion that a seven year project is less attractive to potential employees than a 10 year project (4-22). Additionally, though the DSEIS/EIR refers to the "higher capital investment" with the Faster Processing Alternative, no quantitative data are provided (4-2).

#### Response 07

1. The additional alternatives to the Proposed Action presented in the Supplement were evaluated for their environmental merits and weaknesses in accordance with NEPA and CEQA. There is no requirement to address financial data or the relative costs of mitigation measures for alternatives in an EIS or EIR environmental evaluation.
2. The Commenter suggests that the Draft EIS/EIR Supplement should have considered combinations of the four alternatives. Environmental regulations require that EISs and EIRs address a reasonable range of alternatives with the purpose of eliminating any significant adverse environmental effects or reducing them to a level of insignificance. While there may be literally thousands of "reasonable alternatives" to the Proposed Action, the number of alternatives considered must be kept to a manageable level. The Commenter has not offered an environmental benefit to be realized from addressing some combination of the alternatives already presented in this EIS/EIR.
3. While the Supplement presented a discussion of some of the potential negative socioeconomic impacts that could be associated with the Faster Processing Alternative, it clearly separated these considerations from the discussion of environmental merits and weaknesses and stated that, "these practical and economic considerations would discourage selection of the Faster Processing Alternative from a *socioeconomic standpoint*" (page 4-22) (emphasis added).



CEQA and NEPA do not treat socioeconomic effects as significant effects on the environment. Therefore, although the Supplement offered these considerations, they were not used to determine whether or not the Faster Processing Alternative should be selected. The responsibility of the EIS/EIR has been satisfied in its discussion of the environmental consequences. The Applicant may submit evidence for the record demonstrating that backfilling would be an economic burden at the time project approval is being considered. Neither NEPA nor CEQA require discussions of purely socioeconomic effects in an EIS or EIR.

#### Comment 08

1. Other parameters that should be evaluated in combination include the use of enclosed tanks; additional, available air mitigations; the costs and benefits of backfilling; and the use of thiourea. For example, additional, unspecified, mitigations for fugitive dust emissions are referenced in note 3 to Table 4.2, but not described (4-19). If these measures are available as part of the Faster Processing Alternative, why would they not be available to other alternatives? These measures need to be identified and a dollar amount for their cost needs to be provided.

#### Response 08

1. See Response No. 03 regarding use of solution storage tanks.
2. The cited reference to Supplement Table 4.2 (Comparative Air Quality Impacts, Slower and Faster Processing Alternatives) was intended as an explanation that additional air quality mitigation would be necessary for the Faster Processing Alternative to meet California Ambient Air Quality Standards. Those measures would be the same as the mitigation measures used for the Proposed Action. However, they would need to be more intensive for this alternative (such as more frequent watering, etc.). There is no need for increased air quality mitigation for the Proposed Action, since it is already employing Best Available Control Technology, and would be in compliance with both Federal and State air quality standards.
3. See Section 3.3 (Alternative Mitigation Measures Considered) of this Final EIS/EIR for a discussion of mine pit backfilling costs and benefits.



4. See Response No. 07 in Section 4.3.1.2 (Letter 11: The Wilderness Society and Natural Resources Defense Council) of this Final EIS/EIR for a discussion of use of thiourea for processing.
5. Providing costs for mitigation measures recommended in the Draft EIS/EIR and Supplement is not required for compliance with NEPA and CEQA.

#### Comment 09

1. The DSEIS/EIR continues to fail to evaluate a delay alternative. The potential environmental benefits of this reasonable alternative were well described in our prior comments and need to be addressed in the FSEIS/EIR.

#### Response 09

1. A response to the Commenter's previously suggested alternative for "delay" is provided in Section 4.3.1.2 (Letter 11: The Wilderness Society and Natural Resources Defense Council) of this Final EIS/EIR. The environmental consequences of a delayed approval were satisfied in the Draft EIS/EIR analysis of the No Action Alternative.

#### Comment 10

1. Also, the alternative of moving the processing plant out of the East Mojave National Scenic Area (EMNSA) has not been addressed. The DSEIR/EIR considers the project as a whole with the excavation inseparable from the processing plant. Clearly, moving the processing plant outside the EMNSA would reduce environmental impacts. Likewise, the DSEIS/EIR fails to consider an alternative where tailing piles would be located outside of prime desert tortoise habitat.

#### Response 10

1. The function of the processing plant is to recover gold from cyanide solution. The processing plant, and associated administrative buildings, would occupy less than five acres, as was shown in the Draft EIS/EIR (Figure 3.2.5, Preliminary Site Plan). An offsite location would require that pregnant solution be loaded into tank trucks and hauled to the facility for gold extraction. The barren solution would then need to be hauled back to the project site. This increase in equipment and heavy vehicle road traffic would increase the potential environmental impacts.

2. It should be noted that, as planned, the entire project is located *outside* of prime (Category 1) desert tortoise habitat, as depicted in the Draft EIS/EIR (Figure 4.5.1, Desert Tortoise Habitat and Proposed Access Roads) and in the Supplement (Figures 3.1, Desert Tortoise Habitat, and 3.6, Northern Piute Valley Desert Tortoise Population Densities).
3. The Proposed Action does not involve the production or placement of tailings.

#### Comment 11

1. The FSEIS/EIR must consider a full range of alternatives, including reasonable combinations of alternatives, and must provide a full cost accounting of all the various alternatives in order for the public and the agencies to make an informed comparison.

#### Response 11

1. The environmental review process for the Castle Mountain Project has considered a full range of reasonable alternatives, as presented in the Draft EIS/EIR and Supplement, in compliance with both the intent and requirements of NEPA and CEQA. As discussed in Response No. 07, there is no requirement to present financial data for an environmental analysis of alternatives.

#### Comment 12

1. *The Draft Supplemental EIS/EIR continues to fail to discuss adequately the environmental impacts of the proposed project.* There are many environmental impacts the DSEIS/EIR still fails to adequately discuss. Among them are the impacts of constructing 4.3 miles of new road. What effect will this have on the vegetation, the soils, surface run-off, and the desert tortoise? Are there any endangered, threatened, or sensitive plant species that will be impacted? How many creosote bushes and Joshua trees will be impacted? All the impacts of this new alternative (which is erroneously promoted as a mitigation measure) must be evaluated.

#### Response 12

1. See Response No. 05 for a discussion of the modified access route. The environmental effects of the revised alignment were evaluated in the Supplement (Section 3.2.1.3, Changes in Potential Environmental Impacts), "no significant environmental effects are anticipated as a result of construction or use of this road segment" (page 3-21). Nevertheless, the referenced 4.3 miles of new road construction will not occur, as discussed in Section 3.1 (Final Project Design) of this Final EIS/EIR.



Comment 13

1. The DSEIS/EIR still fails to adequately address the impact of the project on the desert tortoise. Information provided shows that onsite, the heap leach pads and at least one solution pond will surround documented tortoise burrows (3-4, C-9). Such clear threats to the tortoise would appear to be inconsistent with the recent emergency listing of the species and the requirements of the Endangered Species Act.

Response 13

1. It is unclear which documented tortoise burrows are being referred to by the Commenter. The Supplement adequately displays the potential impact to the tortoise from project facilities, as the Commenter references the figure on page 3-4, where the potential impact is shown.
2. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussion of the current threatened status of the tortoise and the FWS opinion that the Proposed Action is not likely to jeopardize the continued existence of the desert tortoise (see Appendix G), consistent with the requirements of the ESA.

Comment 14

1. The mitigation plan for the tortoise is also incomplete. As mentioned, the impacts of the proposed mitigations need to be evaluated and a specific plan developed. Provision of new habitat in Nevada is not adequate for destruction of habitat in California. No assurances are provided that lands used for tortoise relocation will not be impacted in the future. It is insufficient to assume that purchase of private lands necessarily will eliminate existing grazing uses on public lands. Further, the success of relocation efforts for the desert tortoise has never been documented. Expecting these relocations to succeed in surrounding areas that are subject to mining, off-road vehicle impacts, and grazing ensures the failure of such an experiment. These types of proposals will do little to mitigate the project impacts.

Response 14

1. The Draft EIS/EIR discussed mitigation measures for the desert tortoise (Section 5.5, Wildlife) that would avoid or reduce the potential project effects to an acceptable level. The Supplement provided information on the various forms of habitat compensation being considered by FWS, in response to the Federal listing of the desert tortoise as threatened.



2. The Commenter's opinions on the desired selection of mitigation and compensation treatments are recognized. However, the EIS/EIR need only set forth the mitigation measures for each identified effect. The CEQA Guidelines explain that:

*"Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified if one has been selected"* (14 CCR § (c)).

For the desert tortoise, the final selection of the specific additional compensation measures from the list identified in the Supplement (page 3-6) is the responsibility of BLM, based upon consideration of the FWS Biological Opinion. BLM will ensure that Viceroy acquires 745 acres of desert tortoise habitat within Category 1 habitat of the eastern Mojave, consistent with "reasonable and prudent measures" specified in the Biological Opinion (see Appendix G).

#### Comment 15

1. Also, the DSEIS/EIR is inconsistent in its treatment of the closure of Clark County Road A68p as compensation for tortoise habitat. In some places the closure of this road is one of several options (3-7), while in others the DSEIS/EIR suggest that it is part of the project. The closure of this road should be a specific part of the project. Actual habitat protection should have priority over research studies.

#### Response 15

1. Closure of Clark County Road A68p is intended to be part of the Proposed Action. FWS has stated (Appendix G) that the Applicant shall decommission and scarify the road, where appropriate, within two years of the authorization of this project.

#### Comment 16

1. The DSEIS/EIR fails to provide any more details about the reclamation plan. The documentation continues to fail to demonstrate that the proposed reclamation will assure successful reclamation as required by SMARA, and improperly ignores the impacts that will arise from unsuccessful reclamation. The DSEIS/EIR fails to substantiate the unsupported assumption that the revegetation program will be 100 percent successful. The FSEIS should consider a scenario that assumes revegetation will be less than completely successful, given the difficulties of reclamation in fragile desert ecosystems.



Response 16

1. A response to this opinion is provided in Response Nos. 15, 16, and 17 in Section 4.3.1.2 (Letter 11: Wilderness Society and Natural Resources Defense Council) of this Final EIS/EIR.

Comment 17

1. The DSEIS/EIR assumes that the baghouse will operate at peak efficiency 100 percent of the time. However, experience indicates that baghouses suffer complete or partial failure on a routine basis. Again, a scenario that incorporates modeling for upset conditions for all mitigation measures, including the baghouse system, should be evaluated (see 40 CFR § 1502.22). Moreover, the project must have a back-up baghouse system if it assumes operation at peak efficiency 100 percent of the time.

Response 17

1. As stated in the Supplement, "Baghouses have an expected control efficiency of 99.99 percent . . . "(page 3-29). Particulate emissions were modeled assuming a 99.0 percent control efficiency. The operating efficiency of baghouses will be routinely monitored as required by the SBCAPCD to ensure that proper control is maintained. The crushing system is scheduled to be shut down for one working shift each week for preventive maintenance, including the baghouses. Operating a baghouse with improper control efficiency would be a violation of the project air quality permit and would result in a notice of violation, and could result in a fine or other action by SBCAPCD.

Comment 18

1. Also, the DSEIS/EIR assumes that the pond liners will not leak. However, this assumption is also challenged by experience. In fact, U.S. Environmental Protection Agency data reports that all liners will eventually leak (see Geoservices, Inc., *Background Document on Bottom Liner Performance in Double-Lined Landfills and Surface Impoundments*, Springfield, Virginia; National Technical Information Service; April, 1987). Damaging effects may become manifest long after the 10 year life of the project; the public would then pay the full cost of clean-up. Again, the impacts for this scenario must be evaluated.

Response 18

1. The decommissioning procedures at project termination would result in neutralization of cyanide solutions, as discussed in the Draft EIS/EIR (Section 5.7, Environmental Health and Safety). This is not the same type of design consideration as is necessary for liners used for



long-term containment such as for landfills and surface impoundments. The liners used for the Castle Mountain Project would be used for a relatively short time period. Liners at the heap leach pads and solution storage areas will be monitored during the life of the project for potential leaks as described in Section 4.1.5 (Water Resources) of this Final EIS/EIR.

#### Comment 19

1. The impacts from the construction and installation of the natural gas pipeline are still not addressed. The long term effects of cyanide are not discussed. The DSEIS/EIR does not evaluate potential conflicts of the project on potential park or wilderness designation.

#### Response 19

1. See Response No. 09 to the comment previously submitted by the Commenter in Section 4.3.1.2 (Letter 11: The Wilderness Society and Natural Resources Defense Council) of this Final EIS/EIR respecting the natural gas pipeline.
2. See Response No. 08 to the comment respecting long term effects of cyanide in Section 4.3.1.2 (Letter 11: The Wilderness Society and Natural Resources Defense Council) of this Final EIS/EIR.
3. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of the proposed park.

#### Comment 20

1. *Conclusion.* We are also concerned about the content of the Final EIS/EIR for the project. As described on page 2-2, the Final EIS/EIR for the project will consist of a list of certain items. No reference is made to a reevaluation. All of these various components are important, not as individual pieces, but as parts of a whole. Collectively, they should provide a new, objective evaluation of the project based on all the information gathered throughout the complete EIS/EIR process. We hope that the Final Supplemental EIS/EIR will fully address the issues raised above and earlier in the process, and produce the necessary information.

#### Response 20

1. The required contents of a final EIS/EIR are described in Section 1.2 (Final EIS/EIR Requirements) of this document. The information contained in the Draft EIS/EIR and the Supplement do provide all of the information from objective analyses gathered through the



environmental review process completed for the Castle Mountain Project in compliance with NEPA and CEQA. No detailed information has been submitted by the Commenter that would require reevaluation of the issues evaluated in the Draft EIS/EIR.

#### Comment 21

1. A document that satisfies the requirements of NEPA and CEQA is essential in understanding the impacts of the proposed project and what alternatives might be taken to reduce those impacts. This information can then be used to determine if the project will cause undue and unnecessary environmental degradation. The information provided to date, including that in the DSEIS/EIR, indicates that the project, even with proposed mitigations, could cause serious environmental impacts to many resources including: desert tortoise, air, water, wildlife, soil, and visual objectives.

#### Response 21

1. Comment noted.

#### Comment 22

1. In addition, additional mitigations are available for air quality impacts (unspecified at 4-19) and water quality and wildlife (enclosed tanks) but have not been considered in the proposed project alternative. Without these measures the project impacts would be both undue and unnecessary.

#### Response 22

1. See Response No. 08.

#### Comment 23

- 1 As currently proposed, the plan of operations indicates that several laws could be violated and that serious environmental damage might occur if the project went forward. Based on the existing information, the BLM should deny approval of the project or impose mitigations necessary to adequately protect the environment.
2. Thank you in advance for your consideration of our comments. Please send us copies of the Final Supplement EIS/EIR when it is available and all other documents prepared relevant to the project including all maps and specialists' reports.

Response 23

1. Comment noted. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding comments on project approval.
2. The Draft EIS/EIR, the Supplement, and this Final EIS/EIR have considered the environmental effects of the Proposed Action and the mitigation measures that will be employed to ensure that no laws will be violated and to preclude significant environmental damage.
3. A copy of this Final EIS/EIR has been sent to the Commenter. See the User's Guide of this Final EIS/EIR for other relevant documents that are on file and available for public review.







#### 4.3.2.3 RECREATION ORGANIZATIONS

Letter 1: California Association of 4WD Clubs, Inc.



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## LETTER 1: CALIFORNIA ASSOCIATION OF 4WD CLUBS, INC.

Comment 01

1. Route for Project Access - Prior to the conclusion of the project, we respectfully request that all access routes relating to the Castle Mountain project be proposed for permanent designation as authorized routes. No reclamation efforts to "erase" the route should occur, or be stipulated in the Plan of Operations. In the event the designation process does not authorize those routes, or portions thereof, for permanent use, then reclamation of those routes is an appropriate action.

Response 01

1. The BLM will determine whether the project access route should be reclaimed or designated as a permanent authorized access at project completion. The opinion of the Commenter in this regard will be taken into consideration.

Comment 02

1. Recreation Use (Supplement 5-8) - The Association questions the figures reported for annual visitor use in the EMNSA. Please provide the actual references for the data used to formulate the total.

Response 02

1. The data used to estimate visitor use in the EMNSA was derived from a variety of sources, including visitor registration and professional field observation by BLM staff. It is recognized that estimates based primarily on observational data may be questionable and that actual visitor use may vary. BLM is currently completing demographic studies of visitor use and formulating plans for obtaining traffic counts in the area. This data should better characterize actual visitors to the EMNSA.
2. Since the Castle Mountain Project would be located in a remote area of the EMNSA even if visitor use is higher than that estimated, no significant cumulative impact would be expected.

Comment 03

1. Also, members of the Association do not frequent established campgrounds and visitor areas. We question the statement, "The majority of visitors. . .". More discussion of this issue is needed to clarify: day use versus overnight use, developed versus dispersed, etc.



Response 03

1. As stated in Response No. 02, the descriptions of visitor use and frequency of areas visited have been based upon visitor registration and field observation. Future studies should enable better clarification on this issue, which is unrelated to the potential impacts of the Castle Mountain Project.



#### 4.4 RESPONSES TO INDIVIDUALS

1. This section provides a detailed response to individuals that submitted specific comments, requested a detailed response, or whose comments were representative of public input. Where comments or suggestions resulted in modifications to the project or alternative mitigation, those changes were reflected in Chapter 3.0. Comments from letters have been typed verbatim, unless otherwise indicated.





#### 4.4.1 DRAFT EIS/EIR RESPONSES

Letter 1: Scott Anderson  
Letter 2: Chuck Bell  
Letter 3: Jean Breheny  
Letter 4: Phillip S. Cohen  
Letter 5: Marion F. Ely II  
Letter 6: Betty Forgey  
Letter 7: Gerald W. Freeman  
Letter 8: Bruce H. Galinger  
Letter 9: George Hague  
Letter 10: Dorothy Harte  
Letter 11: Jim Lehmann  
Letter 12: John C. Manning  
Letter 13: Karen McKee  
Letter 14: Thomas J. Myers  
Letter 15: John R. Odermatt  
Letter 16: Bruce M. Pavlik  
Letter 17: Home Peters/Valerie Leathers  
Letter 18: David M. Polcyn  
Letter 19: Archie M. Rieser Sr.  
Letter 20: William Savage  
Letter 21: Howard Suskind  
Letter 22: Joanne Vinton  
Letter 23: Richard V. Wyman





## LETTER 1: SCOTT ANDERSON

Comment 01

1. The project site seems massive, approximately four square miles within line of vision of all four areas I mentioned above. The location appears to be smack in the middle of the EMNSA as I know it. As solitaire (or the illusion of it) is a prime motivator for my enjoyment of the area, I have a problem with the "Visual Resources" issue No. 1 on page 1.1-22. The "outdoor lighting" is a concern, as the evenings I have spent in the EMNSA generally have only a faint glow from Vegas to blur the stars. Isn't this going to be a highly visible marring of the landscape and how can you possibly mitigate it?

Response 01

1. The Draft EIS/EIR recognized in the visual resources analysis (Section 5.8, Visual Resources) that "Outdoor lighting for mine pits and other areas of nighttime activities would create new artificial illumination . . ." It was therefore recommended that:

"Outdoor lighting for mine pits and other areas of nighttime activities shall be shielded to reduce fugitive light. The shielded lights shall limit lighting to the area of activity, thereby reducing the visual impact of nighttime operations" (page 6.8-2).

2. The areas illuminated for night-time operations would be a small portion of the 890 acres to be disturbed. Portable lighting units would be necessary only for areas where activities were occurring, such as in the mine pits. Facilities expected to be lit would include, crushing facilities, the solution storage area, processing plant, and administrative area.
3. The Draft EIS/EIR (page 5.8-13) recognized that some project lighting will be visible from selected locations in Lanfair Valley. Project lighting is not expected to be significant and will be removed at project termination.

Comment 02

1. The EMNSA is not just a scenic area, but a proposed National Park. How can you justify an open pit, heap leach gold mining operation in the middle of a National Park? Granted that the current Federal administration shows little concern for environmental protection, consistent with the previous administration, but the elevation of the area to National Park status appears to never the less be a strong possibility with Cranston's bill. Allowing this open pit mine in an area designated (justifiably, I feel) for park status is an incredible contradiction.



Response 02

1. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of the proposed national park.

Comment 03

1. On page 1-11, your review of the "No Action" Alternative appears to be cursory and perfunctory using an antiquated Federal law which pre-dates open pit mines as your principal rationale. Under the definition on page 1-11, I feel that four square miles of open pit leach mining activity large enough to employ 150 people in a proposed national park clearly qualifies as "unnecessary and undue degradation."

Response 03

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for an explanation of unnecessary or undue degradation.

Comment 04

1. Page 1.1-15 says that projections for water requirements indicate "No significant reduction in flow . . . expected at Piute Spring." What happens if these "projections" are erroneous? Flowing water is not exactly a luxury in the EMNSA. Will you shut down this project if their projections are wrong?

Response 04

1. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of the ground water monitoring and contingency plan.

Comment 05

1. Who is going to monitor all of the items that this Summary EIS/EIR contends will be monitored? Who will monitor compliance with vanpooling, reclamation of the site, protection of paleontological resources, 35 mph speed limits (and compliance with those limits, not just putting up the signs), handling of hazardous wastes, appropriate fencing, spill control measures, and the dozens of other promises made in this Draft EIS?

Response 05

1. The Applicant will bear the burden of ongoing monitoring and regular reporting to the agencies. The agencies will also periodically monitor and perform onsite verification of

reporting. These procedures were explained in the Supplement (Appendix E, Draft Mitigation Compliance Program), and are also discussed in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

#### Comment 06

1. Equally important, who is going to pay for all of this monitoring? Is the BLM going to be able to recoup expenses on this venture? Is the government netting a profit overall on the project or is the taxpayer going to have to subsidize this just like we subsidize leasing of coal lands, below cost timber sales and "welfare" ranching on public lands? If I am subsidizing this degradation then I have a real problem with it.

#### Response 06

1. The Applicant will be required to pay for monitoring. The agencies also have authority to levy charges, fees, or assessments to recover costs they incur verifying the accuracy and completeness of the required reports. This issue is further discussed in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR. Other government agencies also derive revenue from income and property taxes.

#### Comment 07

1. What guarantees do we have that reclamation of the site in 10 years will be adequate? The desert environment is fragile and heals slowly.

#### Response 07

1. The reclamation activities include numerous procedures, as outlined in the Draft EIS/EIR (Section 3.28, Reclamation). Many procedures, such as removal of facilities, grading, and soil replacement are tasks that can be readily completed within a few weeks or months and measured for adequacy. It is recognized that other reclamation tasks, such as revegetation will require a lengthy time for recovery. The BLM and County will therefore require that revegetation efforts be directed toward planting and seeding to adequately set the stage for the recovery of the plant community. Bonding will assure that the desired standards are met (see Section 4.1.3, Administrative Considerations of this Final EIS/EIR for a discussion of bonding).

## LETTER 2: CHUCK BELL

Comment 01

1. I am not even close to being a hydrologist, but my gut feeling is that the EIS's hydrology analysis is probably correct. However, as in the case of any hydrogeological analysis of a basin's ground water characteristics, there is never a 100 percent certainty. The report correctly indicates a hydrological link between Lanfair ground water and spring outflow. Well field monitoring is critical, but that alone, even if linked to some unspecified future pumping adjustment, does not really constitute specific mitigation we can hang a hat on at the decision stage.
2. Based on the assumptions that maintenance of adequate surface flow at Piute [Spring] is absolutely critical; that legitimate mining (with stringent mitigation) is an inherently allowed "multiple use," would it be appropriate to require something like the following "fail-safe" mitigation measure as a condition of approval?:

In the event (although unlikely) that project pumping, over the long term, lowers the ground water table to a point lower than its points of outflow to Piute Canyon --- include in the bond funding an amount necessary to cover the costs of drilling and operating a well and system upstream from Piute Spring to supply adequate surface water to compensate for any loss of surface flow related to ground water overdraft or migrating depression cones resulting from the project's ground water withdrawal.

Response 01

1. Comment noted. A contingency plan has been developed that is conceptually similar to that proposed by the Commenter. This plan is discussed in Section 4.1.5 (Water Resources) of this Final EIS/EIR.



## LETTER 3: JEAN BREHENY

Comment 01

1. ...the effect on wildlife that rely upon Piute Creek -- the independent hydrologist and the U.S. Geological Survey have stated that withdrawing the water could very well reduce and even dry up Piute Creek -- an area which you, the BLM, has designated an Area of Critical Environmental Concern! This cannot be allowed.

Response 01

1. It is recognized that a significant effect on Piute Spring would be unacceptable. A substantial amount of effort was therefore expended in preparing the water resource analysis for the Draft EIS/EIR (Section 4.3, 5.3, and 6.3, Water Resources). These analyses were prepared by independent hydrology experts responsible to the BLM and County. It was determined that no impact to Piute Spring would occur as a result of the proposed action.
2. No official correspondence from the U.S. Geological Survey (USGS) has indicated that the proposed withdrawal would affect Piute Creek. The 1984 USGS study of ground water resources of Lanfair and Fenner Valleys was completed as an inventory of water resources (including Piute Spring), not an impact evaluation. Consultation with the preparer of that report regarding the proposed project ground water withdrawals has indicated concurrence with the Draft EIS/EIR evaluations.
3. For a discussion of other opinions on water resource impacts, see Sections 4.3.1.2 (Letter 8.1: Sierra Club Legal Defense Fund/Curry) and Section 4.4.1 (Letter 9: George Hague and Letter 14: Thomas Myers) of this Final EIS/EIR.

Comment 02

1. In regard to the EIS: Water Resources in Table 1.1, Paragraph 1.2: "If the amount of drawdown at monitoring wells exceeds the estimated 60 feet, the well field modeling shall be re-evaluated..." This means that significant damage can be done before any "re-evaluation" even begins. Tinkering with the model does not reduce the drawdown. And significant damage is done before corrective action is taken.

Response 02

1. The Draft EIS/EIR condition for monitoring of drawdown surrounding the well field was designed such that an unanticipated change in drawdown would be detected *before* significant damage could occur. Since the monitoring wells would be located between the well field and Piute Spring, a change in drawdown impact would be detected and the effect could be reevaluated before the drawdown would reach the spring area. The first step would then be to ascertain the reason for the variation through well field modeling and then determine what corrective measures should be taken. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of the ground water monitoring plan.

Comment 03

1. We are... opposed to the Castle Mountain mine project...

Response 03

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of opinions on project approval.

Comment 04

1. This area has already been designated a scenic area; we request that the BLM respect this scenic area and respect the fact that this is part of the area for the proposed Mojave National Park.

Response 04

1. See Section 4.1.7 (Land Use) of this Final EIS/EIR for discussions of project compatibility with the EMNSA Plan, and the proposed national park.

Comment 05

1. We are gravely concerned about water being used in this wasteful way...

Response 05

1. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of water use.

Comment 06

1. This [project] is... undue degradation.

Response 06

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of unnecessary and undue degradation.



## LETTER 4: PHILLIPE S. COHEN

Comment 01

1. Wildlife Mitigation Measures - I have the most trouble with this part of the EIS. I am unconvinced that the efforts to keep wildlife from the cyanide ponds will work. The netting approach seems unlikely to succeed for a number of reasons. First, the EIS fails to consider the high probability that insects will frequent both standing water and moist soil from drip irrigation. Many of these insects are likely to be eaten by lizards and birds. Since cyanide is a cumulative poison, I suspect that mortalities could get quite high over the course of the mining project. At the very least, an effective monitoring program needs to be put in place to determine what the real impact of the cyanide will be through the food chain. There is no discussion of this potential problem in anywhere in the EIS.

Response 01

1. According to the EPA (1980) cyanide is not accumulated or stored in the mammalian species studied to date. Other available studies appear to indicate that cyanide is not accumulated or stored in other animals. Therefore, the Commenter's concern for cumulative food chain effects appears to be inapplicable to cyanide.

Comment 02

1. The problem with insects is likely to be exacerbated by their attraction to the area by night-time lighting with the likelihood that they will in turn attract bats. Lighting that uses parts of the spectrum less likely to attract insects should be considered.

Response 02

1. The Draft EIS/EIR recognized the potential for project lighting to attract insects, which could be preyed upon by bats. However, since access to the cyanide solutions by bats would be prevented by the containment facilities, no significant adverse effect to bats is anticipated.

Comment 03

1. There are indications from netting efforts in Arizona and Nevada, that birds often get entangled. I strongly recommend that a very fine, stiff netting be employed.

Response 03

1. Netting of appropriate size and strength has been recommended by Federal agencies and is being successfully used at mines in California and Nevada. Similar netting is commonly used at fish hatcheries to preclude access by birds. For the Castle Mountain Project, netting with a maximum one inch grid is planned to be used, as recommended by wildlife biologists (see Draft EIS/EIR, page 6.5-3) to minimize entanglement problems.

Comment 04

1. The use of sprinklers on the sides of the heap piles (1.1-13) may attract high numbers of birds (as well as insects). These birds are likely to bath in the sprinkler shower and drink water from the surface. This, in turn will also lead to mortalities. This impact is not discussed in the EIS and no estimates of the impacts are given.

Response 04

1. Comments noted. Plans for sprinkler irrigation were eliminated as stated in the Supplement (Section 3.2.2, Solution Storage).

Comment 05

1. The proposed fencing and culverts to reduce traffic fatalities of desert tortoises generally seems like a good idea with two qualifications. First, careful monitoring should be employed to guarantee that culverts are appropriately spaced. Secondly, spikes or some other technique should be employed on the fencing to avoid a dramatic increase in raven perch sites. Increased perch opportunities for ravens may negate any benefit from the fencing, if not increase mortality rates of young desert tortoises by predation.

Response 05

1. Monitoring of desert tortoise populations to assess the effectiveness of fencing and culverts was recommended as a mitigation measure in the Draft EIS/EIR (page 6.5-3 and 6.5-4). Since fence posts would generally not be as high as surrounding vegetation, they would not be expected to provide an increased advantage to tortoise hunting by ravens.
2. Since plans for the access route have been changed to avoid travel through Category 1 desert tortoise habitat, construction of desert tortoise fencing along access roads is no longer being considered (see Supplement Section 3.2.1, Mitigated Searchlight Access Route).



#### Comment 06

1. The statement on page 4.5-19 that "bighorn sheep do not move or migrate substantially" is wrong. In discussions with John Wehausen and Vernon Bleich (DFG), they have indicated otherwise. Evidence suggesting that bighorn sheep may range further than is generally assumed can be found in the journal article "Genetics and the Conservation of Mountain Sheep *Ovis Canadensis nelsoni*" by O. A. Schwartz, V. C. Bleich, and S. A. Holl in Biological Conservation, 37, 1986, 179-190.

#### Response 06

1. The Commenter apparently interpreted the Draft EIS/EIR statement that "radiotelemetry studies have shown that bighorn sheep do not move or migrate *substantially*, but instead remain within a preferred habitat area" (emphasis added) as an absolute rather than generalized statement. In describing some of the habitats of bighorn, the Draft EIS/EIR intended to explain that bighorn populations are generally associated with certain mountain ranges, which is scientifically accepted and supported by the cited radiotelemetry studies (Lenarz, 1979). This was not meant to imply that intra-range migration does not occur, indeed, known bighorn sheep corridors are mapped in the CDCA plan (BLM, 1981a). The reference cited by this Commenter (Genetics and the Conservation of Mountain Sheep *Ovis Canadensis nelsoni*) hypothesizes that to avoid inbreeding, there must be more mountain range to mountain range movement (at least within 10 to 20 generations) than is recorded in the literature. Although this is a theoretical paper with little supportive evidence, it is acknowledged that the hypothesis may be correct. However, this is not germane to the issue at hand.
2. While the above long-term migrational considerations are of scientific interest, their relevance to the Castle Mountain Project is limited. What is important in the context of potential project traffic impacts to bighorn is whether or not the access route would cross an important migratory corridor. Since bighorn do not continuously move or migrate between mountain ranges, the land between the Castle Mountains and northern New York Mountains (Castle Peaks) is not expected to be an important bighorn migratory corridor, and as there are apparently no bighorn in the Castle Peaks area, no significant impact is anticipated. Moreover, because project traffic is low and the length of the Proposed Action is limited to a known period, the likelihood of a traffic conflict with bighorn is remote, even if occasional intra-range gene flow does occur.



Comment 07

1. The assumption on page 5.5-9 that desert tortoises and other wildlife would recover to their pre-impact densities once the mining project is complete can only be made if minimum viable populations (see Viable Populations for Conservation, ed. by Michael Soule) for each of the species is known. There is no indication in the EIS what the MVP for species such as the desert tortoise has been determined. If the impact from the proposed action is sufficient to reduce numbers to near or less than the MVP, there is considerable likelihood that pre-impact densities will not be possible.

Response 07

1. While the concept of a minimum population is scientifically interesting, its relationship to this project's effects is not considered significant. The likelihood of tortoise casualties from project traffic was determined to be limited as a result of the mitigation measures proposed for the project including relocation of the access road and onsite fencing. Moreover, as the populations that could be affected in Ivanpah and Piute Valleys are the largest in the eastern Mojave Desert, the potential for the Castle Mountain Project to contribute to a substantial reduction in population density below a minimum viable level is unlikely.

Comment 08

1. The EIS is not all convincing with regard to the reliability and effectiveness of the education program (5.5-9). Usually, such programs have a very short half-life if careful monitoring and enforcement are not incorporated. I doubt seriously that employees are likely to maintain a high level of conscientiousness over the ten year life span of the mining project. I could be wrong, but I doubt it.

Response 08

1. Since the Castle Mountain Project would incorporate careful monitoring and enforcement, it is believed that the Commenter's concern for a reliable and effective employee education program will be satisfied. These issues would be included in the follow-up educational meetings that will be scheduled for all employees at regular intervals during the life of the project.

Comment 09

1. Finally, I am generally concerned about the use of cyanide leaching. Currently, large numbers of these operations are beginning to appear in southern Nevada, western Arizona, and southeastern California. We know very little about the long-term impacts of these projects. I have this nagging feeling that we are creating a new generation of toxic waste sites. A prudent approach demands that the BLM should be engaged in a careful analysis of the likely long-term impacts of cyanide/leach techniques for recovering gold and silver. The onus should be on the mining industry to prove that such techniques will not burden the public with a dangerous clean-up operation for the next generation.

Response 09

1. See Response No. 01. As explained in the Draft EIS/EIR (Section 3.2.5.7, Waste Contaminant and Disposal), no toxic wastes would be deposited onsite.
2. Decommissioning of project facilities would involve neutralizing the cyanide solutions according to procedures that are required by the RWQCB to a level where the cyanide is no longer toxic. Residual cyanide would then continue to degrade naturally. The remaining material is spent ore. Tests to characterize this material demonstrate that the levels of extractable metals are considerably less than the Soluble Threshold Limits Concentrations that would be of concern under State law (22 CCR §§66206 and 66700). Because cyanide easily disassociates, is readily neutralized, and naturally degrades, it has not been recognized as a persistent contamination problem at former mine sites.

Comment 10

1. The EIS does not specify how the BLM will determine funding amounts by Viceroy Gold for onsite revegetation research or the amount of bonding for long-term monitoring and revegetation efforts. I am concerned that adequate funds be assured for these efforts. It is important that the EIS specify how long after the completing of the mining activity Viceroy will be required to continue funding, monitoring, and revegetation efforts. Given the 30-60 years (I suspect that the high end of this range is the more accurate) estimated for completion of the revegetation effort, the amount and reliability of funding will be a critical consideration. It may be desirable to require bonding for the full estimated 60 year effort before completion of the mining project. Costs should also include estimates for weeding exotics from revegetated sites.





Response 10

1. The purpose of the Draft EIS/EIR is to identify the potential project impacts and measures to reduce or avoid those impacts. Results of the revegetation program will be monitored and reported as part of the mitigation compliance program described in the Supplement (Appendix E, Draft Mitigation Compliance Program). Specifications for implementation of the mitigation measures and the specific bonding required to ensure adequate compliance are to be dictated in the project conditions of approval based on costs projected in the final Reclamation Plan. At this time, monitoring is planned to occur for up to five years following project completion. A summary of preliminary costs is included in Table 4.1 of this Final EIS/EIR. Weed control is accommodated in the revegetation cost estimate.

Comment 11

1. The figure of saving 25 percent of all Joshua trees under four feet in height is too low a figure. Given the difficulties faced in restoring the area, as many of these Joshua trees should be saved as is feasible.

Response 11

1. The Draft EIS/EIR suggested that, as a minimum goal, at least 25 percent of Joshua trees under four feet tall be transplanted. The intent of the reclamation program is that as many Joshua trees (as well as other plants) as possible and amenable to transplantation, should be saved. This measure has now been revised to favor transplantation of larger specimens, ranging in size from three to 10 feet, unbranched or with few branches, as indicated in Section 3.2.2 (Changes in Mitigation Measures) of this Final EIS/EIR.

Comment 12

1. I strongly recommend that in searching for researchers and consultants to carry out the onsite research and revegetation efforts, that the Society for Ecological Restoration and Management (SERM) be used as a source of expertise. Their address is: 1207 Seminole Hwy., Madison, WI, 53711.

Response 12

1. Comment noted. The expertise of many specialists will undoubtedly be sought during implementation of the revegetation program. The Applicant has contracted with the Desert Studies Consortium for assistance in developing the initial phases of this program.



Comment 13

1. The Vasek (1975) reference made on page 4.4-7 does not appear in the bibliography. I suspect that this refers to the article he did with H. B. Johnson and D. H. Eslinger entitled "The effects of pipeline construction on creosote bush scrub vegetation of the Mojave Desert." This article appeared in Madroño 23:114-130.

Response 13

1. The Vasek (1975) reference inadvertently omitted from the Draft EIS/EIR is included in Chapter 6.0 (References and Resources) of this Final EIS/EIR.

Comment 14

1. Monitoring of Ground Water Levels - If drawdown exceeds the estimates of the modeling effort (page 6.3-2), then all activities should be suspended until modeling assumptions have been properly re-evaluated and evidence is brought forth proving that Piute Springs will not be effected. Simply re-evaluating the model is not sufficient.

Response 14

1. The hydrogeologic studies completed for the Draft EIS/EIR determined that the proposed project ground water withdrawals would not affect flows at Piute Spring. However, it was suggested that, if drawdown exceeds the modeling predictions, a reevaluation be completed as a first step in confirming the continued validity of the model. Since the monitoring wells would be sited such that anticipated variations in drawdown would be detected and evaluated before Piute Spring could be affected, as described in Section 4.1.5 (Water Resources) of this Final EIS/EIR, such variation would not require immediate suspension of all project activities.

Comment 15

1. Recreation - The cumulative impacts described (8.2-5, 8.3-3) do not give adequate attention to the likelihood of increased recreational activities in the East Mojave. Some effort should be made to extrapolate cumulative impacts based on projected increases in recreational demand. My strongest criticism of the proposed park bill is that it does not give adequate attention to the cumulative impacts of dramatically increased recreational use of sensitive desert habitats. This EIS is making the same blunder.

Response 15

1. The Castle Mountain Project is not expected to significantly contribute to an increase in recreational activities. This issue was further discussed in the Draft EIS/EIR Supplement (Section 5.5, East Mojave National Scenic Area Recreation Activity Forecasting) .
2. Since the proposal for a national park in this region is considered speculative, in terms of whether or not any such legislation will be enacted, and if so, what form it would ultimately take, the potential effects of such an action are not considered predictable enough for a useful evaluation in the Draft EIS/EIR. This issue is further discussed in Section 4.1.7 (Land Use) of this Final EIS/EIR.

Comment 16

1. Alternative Power Supply - Why was no consideration given to a cogeneration system (3.3-11). The employment of a PV system for daytime pumping and lighting could reduce the use of fossil fuels, noise levels, and impacts on air quality. Some effort to look into cogeneration setups should be made. Wind turbines might also be feasible in a cogeneration design. Such alternatives may not be economically feasible, but that certainly is not obvious from the EIS.

Response 16

1. Cogeneration systems are commonly designed to employ the secondary heat generated from internal combustion engines for use in water or space heating. Since project demands for such heating are few, the opportunities to take advantage of cogeneration at the project site are limited.
2. Use of wind energy was not discussed in the Draft EIS/EIR because wind turbines would not be a reliable source of energy for this project due to the high project power demand (3,000 kilowatts) and the unreliable winds in the project area. Small wind turbines typically generate about 25 kw, while the very largest machines may generate up to 500 kw. A wind farm of approximately 120, 25-kwh machines or six large 500-kw machines, located in a reliable wind area (such as that in Banning Pass or Tehachapi Pass), would be needed to satisfy power requirements. This form of alternate energy is therefore not feasible for this project.
3. The electrical generation equipment proposed for the project will employ Best Available Control Technology, consistent with SBCAPCD requirements for such facilities. The engines will be equipped with exhaust silencers to reduce noise levels.



## LETTER 5: MARION F. ELY II

Comment 01

1. The EIS thoroughly covers the project and addresses its impacts and mitigations. A number of points were raised however, which need either to be addressed or clarified. A recurring theme (noted below) of county jurisdiction is incorrectly stated or implied numerous times. This creates a situation of confusion regarding who has clear jurisdiction over what. In light of what other counties are doing and any action by the San Bernardino County Board of Supervisors to do otherwise, some erroneous precedents may be established if the EIS content is implemented as stated.
2. [Section 2.2.2] County of San Bernardino - There seems to be a contradiction here. It is stated that the County does not regulate the use of Federal land but yet it also states that the County must approve the site plan. This would appear to be regulation.
3. [Section] 2.4.5.2, County of San Bernardino - It would seem that the same contradiction appears here as in 2.2.2, i.e the County does not regulate the use of Federal lands but they have "regulatory authority", etc., and the implementation of SMARA on Federal lands in California. The Granite Rock decision of the Federal Supreme Court is often cited for this position, but as with all such decisions applies to a narrow position, i.e., (U.S.) Forest Service lands within the Coastal Commission Zone. Such a setting does not exist for this project. The entirety of 2.4.5.2 is misleading and could be considered precedent setting unless corrected.

Response 01

1. The Commenter is technically correct in stating that County jurisdiction for site plan approval involves the 28 acres of private land. However, the applicability of SMARA (Cal. Pub. Res. Code §2710 *et seq.*) to Federal lands is a subject of current debate among regulators.
2. SMARA, as amended by A.B. 747 in 1987, requires that all mines in California (other than those operating prior to 1976 with vested rights) receive a SMARA permit. According to the state of California, these requirements apply to mining operations on Federal and Indian lands.
3. The extent of the State of California's right to regulate reclamation on Federal and Indian lands has been, and will continue to be, an issue of debate. In *California Coastal Commission vs. Granite Rock* the court recognized that "the line between environmental regulation and land



use will not always be bright, for example, one may hypothesize a state environmental regulation so severe that a particular land use would become commercially impracticable" (1987) 480 U.S. at 572. The court in *Granite Rock* thus left open the possibility that State environmental laws, as applied to projects on Federal lands, may in some cases conflict with and thus be preempted by Federal law.

4. It was determined during preparation of the Draft EIS/EIR that this document is not the proper forum for debate over the issue of SMARA's applicability to Federal lands. The Draft EIS/EIR, therefore, took the most environmentally-conscious approach and assumed that the project should comply with the intent of both the 43 CFR 3809 regulations and SMARA. The Applicant's reclamation plan also reflects this view.
5. It is acknowledged that the State of California's position that SMARA applies to Federal and Indian lands has the potential to create jurisdictional overlap and duplication of efforts. The Memorandum of Understanding entered into earlier this year between the State Department of Conservation, the State Mining and Geology Board and the BLM is intended to avoid such problems. For the Castle Mountain Project, the agency responsible for each project mitigation measure in the Mitigation Compliance Program will be identified, to reduce duplication of efforts.

#### Comment 02

1. [Section] 4.10.1, Land Use Plans and Policies - Like Sections 2.2.2. and 2.4.5.2, the inference of County jurisdiction is perpetuated. This should be corrected and clarified. This is a slightly modified repeat of 2.4.5.2 which should also be corrected. Appendix E - Much could be said concerning the Proposed Conditions of Approval listed here, but only a few points will be mentioned at this time. First of all, since only 28 acres of land clearly under County jurisdiction is disturbed by the project, it would appear that many of the proposed conditions actually are de facto land use regulations. As it stands there would be jurisdictional overlap and the potential for conflict with the company being caught in the middle. Since there are only 28 acres involved, the condition for a \$2,000,000 bond works out to be about \$71,428 per acre. This seems somewhat excessive. If the figure is applied to a larger area, BLM jurisdiction would be infringed upon, especially in light of the fact that they will require a bond. This would create a definite conflict and a situation of double jeopardy. How this figure was derived should be shown.

Response 02

1. The conditions of approval and bonding attached to the County's initial study as stated in the Draft EIS/EIR (Appendix E, Public Scoping Notifications) were preliminary and were circulated only for purposes of public comment and discussion. The final conditions for environmental mitigation, reclamation, and bonding will reflect the results of the EIS/EIR process, the final reclamation plan, and other considerations determined appropriate by the BLM and County. Preliminary reclamation costs that will be used in the determination of appropriate bonding are included in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.



## LETTER 6: BETTY FORGEY

Comment 01

1. Apparently you are cognizant of the tortoise-proof fencing requirement as stipulated in *Recommendations for Management of the Desert Tortoise in the California Desert* (July 1988), which includes Nipton and Ivanpah Roads. I mention this because: On Table 1.1, 4.1 (*sic*) it reads: "An onsite inventory for the desert tortoise was completed for this document. No tortoises were seen but burrows were found." Can it be possible that no onsite inventory was taken along the Ivanpah access route? Tortoise densities are known to exceed the numbers set for *crucial habitat*. Does this indicate the environmental assessment was slipshod?

Response 01

1. Tortoise population densities along the Ivanpah Access Route were not measured as part of the baseline studies for this project because it was unnecessary. That area had been previously inventoried and the results were mapped in the Draft EIS/EIR (Figure 4.5.1, Desert Tortoise Habitat and Proposed Access Roads).

Comment 02

1. What mitigation and compensation measures will be taken for the four [plus] square miles that will be needed for construction and operation of the site? Will the fencing be around this area or just the 890 acres that "will be disturbed for the site?"

Response 02

1. Desert tortoise mitigation measures were identified in the Draft EIS/EIR (Section 6.5, Wildlife). Habitat compensation considerations were discussed in the Supplement, (Section 3.1.1.4, Habitat Compensation). The fencing plan is shown in Section 3.1 (Final Project Design) of this Final EIS/EIR and is designed to surround the areas of the site where activities would occur.

Comment 03

1. Will there be mitigation for habitat loss along water-line routes, powerlines, telephone lines and *future* gas lines, all of which are outside the site boundary but will impact tortoise populations?



Response 03

1. The cited ancillary facilities would be located along roadways so that additional habitat disturbance would not occur, as discussed in the Draft EIS/EIR (Section 3.2.5, Utilities, Ancillary Structures, Equipment and Supplies).

Comment 04

1. What formula for compensation is being recommended for the ten or more years that this land will be unavailable to wildlife? Where are the necessary funds, services and land for offsite relocation mentioned in the draft?
2. As long as this Castle Mountain Project will be reached by driving on roads in *crucial tortoise habitat*, BLM must consult with the U.S. Fish and Wildlife service on any action which may negatively affect the tortoise. And revegetation efforts by BLM in the past have been a sham.

Response 04

1. A final recommendation of compensation and funding has been made by FWS, as a result of formal consultation in accordance with the ESA (16 U.S.C. §1531 *et seq.*). The specific data on compensation and funds can be reviewed in the FWS Biological Opinion, included in Appendix G of this Final EIS/EIR.
2. The project access road has been relocated outside 'crucial' (Category 1) desert tortoise habitat, as discussed in the Supplement (Section 3.2, Mitigated Searchlight Access Route), and in Section 4.1.6 (Wildlife) of this Final EIS/EIR.

Comment 05

1. The major potential cumulative effects of impending activities in the project area (use of precious water, disturbance to wildlife habitat, reduced air quality, and visual resources) constitute "unnecessary or undue degradation" and the *No Action* Alternative is applicable.

Response 05

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval/denial and for an explanation of unnecessary or undue degradation.

## LETTER 7: GERALD W. FREEMAN

Comment 01

1. ...If the Nipton-Moore-Ivanpah dirt road, which is immediately west of and follows the Union Pacific R.R. tracks, were to be appropriately graded and maintained, it would provide for access... minimizing the cumulative impact on the crucial desert tortoise habitats. The existence of people, noise, vehicular movement etc. naturally repels this animal and it will of its own seek isolation and disengagement away from man made intrusions. Thus project traffic access along the existing tracks will probably encounter the minimal possible number of individuals.

Response 01

1. The suggested road access was not considered because it would pass through Ivanpah Valley Category 1 habitat. The preferred access, as discussed in Section 3.1 (Final Project Design) of this Final EIS/EIR would avoid project traffic in Category 1 habitat.

Comment 02

1. ...many workers at the Morningstar Mine, the Mountain Pass Mine and the Colosseum Mine commute daily from their homes in Henderson, Boulder City and Searchlight along Hwy 164-Nipton Road to their jobs and back - being a rough equivalency to the socioeconomics of the "Ivanpah Access Route Alternative." Why would a special case exception be made for the Castle Mountain Project?

Response 02

1. Comment noted. It is recognized that existing roads are presently traveled by workers employed at operating mines and other local industries. The Castle Mountain Project would not represent an exception to these existing conditions.

Comment 03

1. Power - The DEIS/EIR indicates on page 3.2-29 that an estimated 260,000 gallons of diesel fuel and 250,000 gallons of propane would be used per month. Fuel would necessarily be stored at the mine site from occasional bulk deliveries. A large fraction of these fuels would be required for the generation plants to supply electric power to the project. It seems to me

that the transport, offloading, storage, loading and usage of this amount of fuel presents a set of "high profile" risks to the environment which could be avoided altogether by bringing in utility power to the project.

#### Response 03

1. Use of electric utility power was discussed in the Draft EIS/EIR (Section 3.3.4, Alternative Power Supply). Contact with Southern California Edison indicated, however, that current capacity of local power distribution facilities is insufficient to serve the Castle Mountain Project. As well, BLM policy is directed toward restricting additional power line routes in EMNSA.
2. Procedures for loading, unloading and transport of fuels are strictly regulated by the Federal Department of Transportation (49 CFR Part 171, 173, and 177). Response to fuel spills is regulated by the National Oil and Hazardous Substances Contingency Plan (40 CFR Part 300), as well as by applicable State and local laws and regulations.

#### Comment 04

1. Water - There is active opposition to the project based upon a purported threat to Piute Spring as a direct consequence of the ground water usage anticipated in the mining and extraction at the Castle Mountain site. The purported threat could be entirely eliminated or alternatively mitigated by pumping water from the southeast portion of Ivanpah Valley to the project site. The hydrogeology of the Ivanpah Basin has been the subject of a recent study by The Mark Group: *Ground Water Study of Ivanpah Valley, Nevada and California in Relation to Proposed Development by Whiskey Pete's/Kactus Kate's* dated (October 25, 1988).
2. This study provided data to support the request of Whiskey Pete's for a total pumpage allocation of 2828 acre-feet of ground water (net consumption of 1803 acre-feet) from wells drawing on the Ivanpah Basin aquifer(s). The Tertiary to Quaternary aquifer(s) in the basin are estimated to contain between 11 and 86 million acre-feet of ground water. Why should the Castle Mountain Project with a 10-year estimated life be constrained from drawing a portion of water small in its demands by comparison to the gambling casinos along Interstate 15 which in fact draw upon the same reservoir? Surely the mineral extraction usage has as much socially valid claim on the waters as does the casinos.



3. Page 3.3-10 of the DEIS/EIR contains the statement "...the low quality of Ivanpah Valley water could require installation of a treatment plant at the project site to condition the water prior to use in the leaching process." I believe that this statement is factually inaccurate. I am in possession of analyses on waters taken from my wells at the Ivanpah Yard in the southeast portions of the Ivanpah Basin which indicate waters of exceptionally good quality. Subject to the question of affordability, Viceroy Gold Corporation would be well advised to look to Ivanpah Valley for waters which would mitigate the regional environmental impact and provide useful answers to extremely sensitive environmental issues generated by their project.

#### Response 04

1. The Draft EIS/EIR detailed analysis of the potential effects to Lanfair Valley aquifer (Sections 4.3, 5.3, and 6.3, Water Resources) determined that the proposed ground water withdrawals would not affect Piute Spring. The BLM and County prefer to use credible scientific evidence and well conceived analyses as a basis for informed decision making where possible, instead of public controversy based upon a *purported threat*. A hydrologic monitoring program will be implemented to confirm the actual effects on the aquifer.
2. The primary reason for eliminating use of Ivanpah Valley water as discussed in the Draft EIS/EIR (page 3.3-10) was that such water development would require construction of a 14-mile pipeline. However, it was also noted that water from lower elevations in southern Ivanpah Valley is reportedly of low quality. It is recognized that there are supplies of good quality water available at certain locations on upper alluvial fans in the valley, such as from wells used by the Commenter for domestic purposes.

## LETTER 8: BRUCE H. GALINGER

Comment 01

1. Intermountain Movements - Haul Roads - Although desert mountain sheep may be primarily associated with mountain ranges, they are also associated with intermountain valleys (corridors), at least intermittently. In the past ten years radio telemetry studies have shown that intermountain movement by bighorn is more common than previously believed. Such movement corridors have crossed non typical bighorn habitat (valleys, rolling hills, etc.) as documented Campbell (1984), Ough and deVos (1984), Cochran and Smith (1983), and King and Workman (1983). Witham and Smith (1979) documented bighorn movement among a six mountain complex in southwestern Arizona, and recommends the populations be managed as a single unit. Leslie (1977) found, in the River Mountains of Nevada, bighorn to be restricted in movement by human encroachment, hence, bighorn movement patterns may be interrupted by the proposed mine complex and/or increased traffic on the proposed haul routes, either haul route may negatively impact movement by bighorn (i.e., road kills, and disturbance) (Anonymous, 1984; Geist, 1971; McQuivey, 1976; Wehausen and Hansen, 1986; and Wilson *et al.*, 1980).

Response 01

1. Project operations, including ore haul routes, would be restricted to the onsite areas as described in the Draft EIS/EIR. As the site is located at the southwestern limits of the Castle Mountains and is not an intermountain valley, it is not expected to interfere with the potential for bighorn sheep movement in the area. The primary concern investigated for the Draft EIS/EIR was for access road traffic associated with employees and intermountain bighorn travel between the northern Castle Mountains and the Castle Peaks area of the New York Mountains. Since intermountain movement at this location is minimal or nonexistent, and project traffic would be relatively low and limited to an approximately ten year period, it was determined in Section 5.5 (Wildlife) that the traffic would not significantly affect the bighorn's movement.

Comment 02

1. Human Disturbance - Bighorn have been observed on the proposed mine site by Gould (1987 a,b) and 10 bighorn were observed within 1.6 km of the site in the fall of 1988, during a helicopter overflight (R. Weaver, personal communication), therefore, to say that there is no loss of bighorn habitat would be foolish, as the site does receive some use by bighorn. Because of the lack of information regarding this bighorn population (Wehausen and Hansen,



1986; Weaver *et al.*, 1969) it seems quite presumptuous to say that a loss of 890 acres of forage area is an insignificant loss to the population. We feel there is the potential for accumulative negative impacts to this population of desert bighorn sheep, thus mitigation which may enhance and improve the Castle Mountain bighorn and their habitat should be instituted in the Final EIS/EIR, Chapter 6-mitigation (Graf, 1980; Graham, 1980; and Wilson, *et al.*, 1980).

#### Response 02

1. The Draft EIS/EIR (Section 5.5.1.1, Facilities Impact on Wildlife), recognized that the project site receives some use by bighorn sheep, and that the proposed project would therefore result in a loss of available habitat for the life of the project.
2. See also Section 4.1.6.3 (Bighorn Sheep) of this Final EIS/EIR for an additional discussion on this topic.

#### Comment 03

1. Various forms of human disturbance into bighorn range has been well documented, however, not so in this Draft EIS. Hailey (1977) cites habitat destruction as a limiting factor for Texas bighorn reintroduction efforts. Loss of vegetation, water sources, as well as direct human disturbance can have significant negative impacts to bighorn populations, according to Buechner (1960), Hansen (1982), Monson and Sumner (1980), and Wilson *et al.* (1980). Dunaway (1971) recommended limiting human use of specific areas of bighorn habitat, in the Sierra Nevada Mountains, California, to provide adequate space (area/habitat) for native bighorns. Graham (1971) attributes human use to cause bighorn to avoid areas of their historic home ranges within the San Gabriel Mountains of California. DeForge (1972) also recorded a decrease in bighorn use of an area because of an increase in human use. Hinkes (1978) concluded that major bighorn problems, in certain areas of their range, include mining activities and land development, thus, human encroachment usually results in negative impacts to local bighorn populations. Campbell and Remington (1979, 1981) documented the abandonment of an historic bighorn water source, due to construction activities, and a shift to an new artificial waterhole located away from the construction site. Construction activities caused a significant shift in bighorn use of waterholes, within the River Mountains, Nevada (Leslie and Douglas, 1980). Stress of bighorn, due to numerous forms of human disturbance and encroachment, may also contribute to the decline in populations (DeForge, 1976; 1981). In the past 200 years mining was quite detrimental to native bighorn populations because of occupying the same habitat and competing for the same waterhole, the bighorn lost out and



declined in numbers (Duncan, 1960). Ferrier (1974) noted an increase in human activities (recreation) contributed to significant losses to bighorn population and traditional movement routes were lost, possibly forever. Hamilton *et al.* (1982) recorded bighorn use, at a natural mineral lick, to (*sic*) declined to only those times in which humans were absent from the trail that passed nearby. Vehicular traffic at a waterhole caused a 50 percent decrease in bighorn use during the critical summer season, as observed by Jorgensen (1974). Neal (1974) also documented that human population growth encroaches upon bighorn populations with negative impacts. Nelson (1966) noted that human intrusion into bighorn habitat can destroy cover and water resources, some bighorn populations adapt/habituate, others decline, or remain static.

### Response 03

1. Background literature relating to human disturbance within bighorn sheep range was reviewed in the preparation of the Draft EIS/EIR. However, such a literature review was not included in the Draft EIS/EIR because much of the information is not applicable to the impacts anticipated from the Castle Mountain Project, and because the Draft EIS/EIR was prepared as an analytic rather than encyclopedic document.
2. For the Castle Mountain Project, the source of disturbance would be activities and noise from equipment and people. Intrusion into bighorn habitat in the Castle Mountains would primarily be in the bottom of a relatively small drainage where the mine pits are located. The upper slopes and ridgelines in the project area would receive little use. Interaction with the bighorn, when they occur in the area, is expected to be minimal. The potential for harassment would be reduced through the employee education program (see Draft EIS/EIR mitigation measures in Section 6.5, Wildlife).

### Comment 04

1. Fencing - Helvie (1971) and Wehausen and Hansen (1986) point out that bighorn and certain types of fences do not mix, therefore, the fence type around the mine complex should be chosen very carefully, as to avoid accidental deaths of bighorn.

### Response 04

1. Comment noted. The BLM has required that fencing for the project be constructed according to specifications designed to avoid entanglement of bighorn sheep. For the Castle Mountain

Project, the main area of concern regarding conflicts between bighorn and fencing is the perimeter fencing. A mitigation measure in this regard has been added in Section 3.2.1 (Additional Mitigation Measures) of this Final EIS/EIR.

#### Comment 05

1. Whereas, water is a primary limiting factor in most desert bighorn mountain ranges and food (habitat quality and quantity) and/or competition for space may be a secondarily limiting factors.
2. Whereas, the Castle Mountain Project (proposed mine) will encroach upon known bighorn habitat and haul routes will cross known movement corridors, I recommend the following mitigation measures within the Castle Mountains/northern Piute Range:
  - Two or three big game guzzlers, to provide more water and potentially increase and distribute bighorn within their habitat. Enclosures to prevent competition and disease transmission from domestic livestock and feral equus species. All to California Department of Fish and Game specifications. Cost per guzzler; approximately \$15,000, and built by volunteers.
  - Enhance Kidney Spring for use by bighorn and other wildlife by enclosing the spring with an enclosure (as above); and provide for more water storage. Cost approximately \$2,000, and built by volunteers.
  - Monitor the constructed and enhanced waterhole, using time lapse photography systems, to determine wildlife (bighorn) use, for three years from the time the sources have water stored. Monitor weekly (change film) during June through August. Monitoring could be accomplished by CDF&G, Bureau of Land Management, volunteers, and/or contracted. Cost approximately \$75,000-\$100,000 for three seasons.

#### Response 05

1. The Commenter's opinions on compensation are noted. Based upon the limited potential for the Castle Mountain Project to affect the bighorn sheep, the mitigation measures determined in the Draft EIS/EIR are considered appropriate.



**LETTER 9: GEORGE HAGUE****Comment 01**

1. There is a need to use existing scientific technology to trace the various sources and quantities of the water during all periods of the year before their plan is even considered.
2. There is a need to further analyze the effects of withdrawing various amounts of water during all periods of the year.

**Response 01**

1. The hydrologic monitoring program recommended in the Draft EIS/EIR (Section 6.3, Water Resources) and further described in Section 4.1.5 (Water Resources) of this Final EIS/EIR will monitor the quantity of drawdown on a monthly basis.

**Comment 02**

1. The use of computer modeling only gives results one wants - garbage in equals garbage out. Other analysis needs to be done by people concerned with the environment. This analysis needs to address all concerns mentioned under Piute Creek.

**Response 02**

1. The computer model used for the Draft EIS/EIR analysis is a standard model employed by the USGS. However, it is recognized that the actual drawdown could differ from that predicted through modeling. Therefore, a program of hydrologic monitoring was recommended in the Draft EIS/EIR (see Response No. 01).

**Comment 03**

1. What is the amount of water which must stay in Piute Creek to avoid any degradation to the environment, including but not limited to the flora and fauna and minerals and air.

**Response 03**

1. The exact amount of Piute Spring flow necessary to maintain riparian habitat that supports wildlife in that area is unknown. The minimum flow could however, logically be assumed to be the minimum flow measured and shown in the Draft EIS/EIR (Table 4.3.1, Piute Spring Monthly Monitoring). Based upon the Draft EIS/EIR analysis, the proposed project withdrawals would not affect this minimum flow.



Comment 04

1. Who will monitor that Piute Creek will always maintain enough water to continue the existing ecosystem?

Response 04

1. The project hydrologic monitoring program required in the Draft EIS/EIR and discussed in Section 4.1.5 (Water Resources) of this Final EIS/EIR will continue to include monitoring of Piute Creek flow for the life of the project.

Comment 05

1. Will monitoring be done on a daily basis with hourly documentation? Will there be a daily hard copy to examine and if not, why?
2. Will those monitoring have both the power and ability to shut down the water - to this mine - from this source without obtaining permission from those connected to the mine? Will there be a button or other mechanism which would allow this to happen easily?
3. If the water flow is stopped, who has the power to turn it back on and what documentation would have to be presented to allow its resumption? Also, who would prepare the documentation?
4. There is a need to have those who monitor the water flow and have the power to turn off and on that flow to have no connection with the mining company. The mining company needs to address funding an independent committee which would hire and check on those who monitor Piute Creek. Those on the committee should have no connection with the mining company.
5. This committee should be more than just government employees and should be selected by those not connected with the mine.

Response 05

1. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a detailed discussion of the hydrologic monitoring program.

Comment 06

1. The town just south of Grand Canyon has no water of its own and must truck in all its water needs. They use both fresh and reclaimed water. This may cause more traffic, but it should be analyzed as an alternative.

Response 06

1. The alternative of trucking water to the site was addressed in the Draft EIS/EIR (page 3.3-11). "It is expected that use of trucks to deliver project water would be environmentally disadvantageous. The trucks would generate an additional 220 ADT, so that traffic would be about three times that of the Proposed Action." As the potential traffic impacts on the desert tortoise were a major environmental concern, and because no effect on Piute Spring is expected, this alternative was eliminated from consideration.

Comment 07

1. What are the risks to Piute Creek in case of an earthquake? Does the mine using the water increase the potential damage to Piute Creek during earthquake activity?

Response 07

1. The potential effects of an earthquake on Piute Spring flow cannot be reasonably determined, due to the numerous variables that would be involved. It is not believed that undertaking such an evaluation would provide additional useful information with regard to the potential project effects on the Lanfair Valley aquifer.

Comment 08

1. Who makes sure the monitoring equipment is always "state of the art" and in good working order? Will the mine be required to buy new equipment when those who are monitoring the creek demand it and will it be done in a timely manner? Again, this points to the need for a large fund of money controlled by the committee and not the mining company.

Response 08

1. The BLM and County will verify compliance with the requirements for accurate hydrologic monitoring as provided in the MCP (see Supplement, Appendix E).

Comment 09

1. An exhaustive economic analysis needs to be included in the Final EIR. A recent L.A. Times article stated that this operation would generate 40 million dollars per year in gold and continue over a ten year period. This easily results in half a billion dollars when you factor in inflation.
  - How much of this 500 million will stay in the local economy? A breakdown of how much each element of the local economy receives needs to be included for each of the ten years. The information and factors used in this analysis needs to be included.
  - Since only about one hundred employees will be working at the mine, very little of the money will be used for local salaries. The economic analysis of the 500 million needs to include where the money which is not spent locally will finally end up.
  - If the economic analysis is to include the recirculation of money, then it needs to be so identified.
  - Laughlin, Nevada and its surrounding area is experiencing great growth. The growth of this city and all of its neighbors like Bullhead City need to be analyzed for their economic benefits and employment opportunities between 1986 and the year 2000. This is the same time period as the proposed life of the mine. Each year needs to be separately explained with documentation as to the source of information.
  - The Final EIR analysis needs to explain why the world is in critical need for this gold. Why this critical need cannot be met elsewhere. What percentage of the total world production of all forms of gold will be realized from this operation.
  - The Final EIR analysis should also explain what percentage of the world's gold is used on non-critical uses, such as jewelry. Also, what percentage of the world's gold is used in areas where acceptable substitutes are available, such as dentistry.
  - The Final EIR needs to explain why the California people and the environment must live with the environmental consequences of this project. The Final EIR needs to include why the "no project alternative" would prove detrimental to the world's vital need for this gold.
  - The Final EIR's economic analysis needs to include a summary from an economist who does not believe in the benefits of the "trickle down" effect.

Response 09

1. The BLM and County will consider other information including technological, social, and economic data prior to rendering a decision on the discretionary entitlements being requested.





Comment 10

1. Is there an economic analysis that shows the true value of this water, both environmentally and to this business? If not, it needs to be addressed. What will they pay for Piute Creek's water above and beyond taxes.
2. The water in Piute Creek and the ecological system it fosters belong to the taxpayers like myself. What legal right do they have to take this water which is worth millions of dollars to them, but more importantly, is worth millions of dollars to the environment?

Response 10

1. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of water use.

Comment 11

1. Who else will monitor the entire project? Since governmental agencies whose duties include monitoring are famous for not having enough money to do their job, who will insure that there will be enough monitoring? Those approving the project must demand monthly unannounced inspections of the project. Will this be built into the final plan? If not, why?

Response 11

1. As discussed in the Draft EIS/EIR regular onsite monitoring would be completed by an environmental specialist/consultant, with the results reported to the BLM and County. This monitoring will be required to the satisfaction of the agencies as necessary to demonstrate compliance with mitigation measures and conditions of approval. These monitoring requirements are part of the MCP for this project and were described in the Supplement, (Appendix E, Draft Mitigation Compliance Program). In addition, periodic "unannounced" or unscheduled inspections of similar operations are currently conducted by BLM and would be carried out for this project.

Comment 12

1. Any bonding must be based on the cost 10 to 20 years after the start of the project. Appropriate inflation factors need to be included.

Response 12

1. The Draft EIS/EIR explains that reclamation procedures would be accomplished as an active part of ongoing operations. As stated in the Draft EIS/EIR (page 3.2-54), costs for the reclamation of affected areas and removal of facilities would be appraised at the prevailing cost



rates at the time reclamation is to be completed. Since bond amounts would be established annually, this would address the Commenter's concern about inflation. Bonding is also discussed in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

#### Comment 13

1. Analysis for the worst case toxic problems need to be in the Final EIR. Cost for the worst case situation and combinations of situations needs to be included. The EIR must include the word "shall" bond for the above toxic problems. The bonding shall remain for 10 years after the closure of the project.

#### Response 13

1. CEQ regulations (40 CFR §1502.22(b)) do not require "worst case" analysis; instead, the regulations focus on "reasonably foreseeable" consequences. The analysis of such impacts must be supported "by credible scientific evidence" and "not based on pure conjecture" and be "within the rule of reason."
2. Toxic substances associated with the project would include certain wastes and processing reagents. The Draft EIS/EIR (Section 3.2.5.7, Waste Containment and Disposal), explains that the proposed project would generate relatively limited quantities of wastes considered toxic or hazardous. The wastes generated would be detoxified onsite (such as solutions containing cyanide), recycled (such as oils and solvents), or packaged and disposed offsite (for unrecyclable wastes). Use of processing reagents would be controlled as provided in the spill prevention and preparedness plan.
3. Bonding for detoxifying the leach solutions and heap leach piles will be required by the RWQCB. The bond would remain in effect until it is demonstrated that residual levels of cyanide in the spent ore piles have been reduced to levels acceptable to the RWQCB. Bonding amounts will be determined by the RWQCB during its consideration of the application for a waste discharge permit. Preliminary reclamation cost estimates that will be used in determining bonding are shown in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

#### Comment 14

1. Analysis for the cost of restoring and maintaining the restoration for at least 10 years after the close of the operation. This means restoration of the water, land, minerals, animals, and flora. This restoration plan needs to be developed and approved before any grading takes



place and it must be subject to the public hearing process. The plan needs to be prepared by those who know the desert. The plan needs to include the size and types of plants. The cost of maintaining them and replacing those that die needs to be included. A bond which will cover the total cost needs to be in place before any grading begins.

#### Response 14

1. See Response No. 12. The estimated cost of reclamation, as determined for purposes of bonding, will be assessed based on the activities necessary to complete reclamation to the satisfaction of the BLM and County. The time normally required to complete such work will be a factor in determining such costs.
2. Bonding would include the cost for revegetation; determination of cost will include an allowance for maintenance and replacement of individual specimens that die. Appropriate bonding would be required before surface disturbances occur.
3. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for an additional discussion on bonding.

#### Comment 15

1. The Final EIR needs to address the possibility that the operations will close down before the proposed 10 year life. This could happen because of the world price of gold. Will the mine owners be able to temporarily shut down operations waiting for the gold price to change? They need to bond for maintaining any mitigations during this time period. I believe such temporary shut downs should not be allowed for more than six months. The Final EIR needs to address that restoration of the area and the removal of any mine related equipment and material. This shall commence six months after any shutting down of normal operations. The project needs to bond for the ultimate cost of any of the above.

#### Response 15

1. The Draft EIS/EIR was prepared to address the potential effects to the environment that would be associated with full development of the project. It is not believed that an intermittent shut-down during the life of the project would result in additional significant effects to the environment.
2. The bonding will be of a sufficient amount so that should the Castle Mountain Project be prematurely terminated, adequate financing for reclamation of the site would be assured.



Comment 16

1. The Project needs to bond for any major disaster that can take place. Please do not answer like Exxon and say that a disaster isn't possible or that we are ready for any possible problem.

Response 16

1. The Commenter has apparently confused liability insurance coverage with bonding. Bonding is required to guarantee that the financial resources needed to cover the costs of certain mandated activities will be available in the event the project proponent fails to perform those activities. Liability insurance is generally obtained by a project proponent to compensate for losses incurred as the result of an accident or other unanticipated incident.
2. The project proponent would be required to bond for the anticipated costs to reclaim the project site.

Comment 17

1. The project needs to bond for all mitigation measures. Some of these measures may be fine when new, but during the ten year life of the project they could become useless. The cost for replacement needs to be computed. The agency responsible for demanding their replacement needs to be listed in the Final EIR.
2. A time period of less than two weeks must also be in the EIR for the replacement of any mitigation measures upon notification by a responsible agency or employee.

Response 17

1. As a result of the MCP (see Supplement, Appendix E), the effectiveness of mitigation measures would be monitored throughout the life of the project; if deficiencies are identified, they can be corrected. Since the BLM and County would be able to require repair or replacement of any facilities associated with mitigation measures throughout the life of the project, bonding for replacement of such facilities would not be necessary.
2. The specific agency responsible for each mitigation measure will be listed in the final MCP.
3. The required time period for repair or replacement of mitigation facilities would be determined by the agency responsible for compliance based upon factors such as the type of repair needed and degree of potential jeopardy to the environment.

Comment 18

1. The Final EIR needs to address the replacement of any mining equipment which becomes old and thus potentially lethal to the environment. Who besides the mining company can demand the replacement of equipment, vehicles, and mining materials? The Final EIR needs to spell out which agency has the authority to determine that replacement of any of the above is needed. The mining company needs to bond for the above replacement. The mining company must be required to permanently remove from the premises any of the above within 48 hours of being notified.

Response 18

1. Replacement of equipment designed to protect the environment could be required by the agency responsible for the protection of the environmental resource. For example, should it become evident that fabric filters in the baghouses used to capture and control dust emissions were becoming old and emissions of particulates occurred, the SBCAPCD would require their replacement. As with mitigation procedures, repair or replacement of equipment designed for environmental protection would be required during project operation whenever the operator was not in compliance with permit conditions. Bonding for such replacement is therefore unnecessary. The required time period for repair or replacement would be determined by the responsible agency, as appropriate (see Response No. 17).

Comment 19

1. Bonding for all of the above needs to be in place before any grading is allowed. The cost of any and all of the above needs to be presented in the Final EIR. The cost needs to be adjusted for the 10 year life of the project. It then needs to be adjusted again for 10 years after the project. All bonding must be in place for the length of the project and for the 10 years which follows.

Response 19

1. As explained in the Draft EIS/EIR (page 3.2-53), "The bond would be maintained in an amount at least equal to the estimated total cost of reclamation for the acreage disturbed." It is BLM policy to require the bond prior to permitting surface disturbing activities to occur. Annual bond adjustments would occur, based on reclamation actually completed in the prior period and planned surface disturbance for the next period.



2. See Response No. 12 regarding inflation and cost adjustment. Bonding for each activity would remain until such time as reclamation was completed to the satisfaction of the responsible agency.

#### Comment 20

1. Responsible agencies should be the only ones with access to the various monies from the bonding. The Final EIR needs to address the fact that the mining company shall not interfere with the dispersal of this money.
2. It would be irresponsible for any governmental agency to allow a project like this without protecting the taxpayers. Not only would you be protecting the taxpayer by requiring bonding, but you would be protecting the funding of existing programs and agencies.

#### Response 20

1. The Draft EIS/EIR (page 3.2-54) explains that:

- "The bond would be jointly assessed by the BLM and County and the Applicant would be required to deliver a surety bond or one or more irrevocable letters of credit payable to the benefit of the United States and San Bernardino County."

Treasury bills, certificates of deposit or other suitable financial instruments could also be used for bonding. Disbursements from the bond would therefore be within the control of the agencies.

#### Comment 21

1. The Final EIR should also address the idea of the plant starting up again after shutting down. The Final EIR should include the statement that a new EIR will be prepared if the project tries to reopen after ceasing normal operations for six months.
2. The Final EIR should also address the possibility of the project life being longer than 10 years. The Final EIR needs to recognize the needs for a supplementary EIR being completed prior to any time beyond 10 years, with public hearings being required.

#### Response 21

1. See Response No. 15.





Comment 22

1. The Final EIR also needs to address the total impact of the "bullet train" mentioned on [pages] 8.2-3 and 8.2-4. To simply say that there is not enough information is not good enough. The potential environmental and cumulative impacts are enormous. These need to be analyzed with documentation.

Response 22

1. A detailed assessment of the impacts arising from the bullet train cannot be completed until that project is proposed and the preliminary design is known. The responsibility of the Castle Mountain Project EIS/EIR is to identify reasonably foreseeable impacts of future activities that could affect elements of the environment in combination with the Castle Mountain Project. The Draft EIS/EIR (Chapter 8.0, Cumulative Impacts) provides such an assessment for the bullet train at an appropriate level of specificity.

Comment 23

1. Since an environmental document should be easily read by the public, I will expect each of my concerns to be addressed entirely and completely in its own section of the report. I do not want to be referred to various pages throughout the document to explain my concerns.
2. Thank you for letting me respond to the Final EIR. Please let me know of each meeting, even those that are continued, concerning this proposed Castle Mountain Project. This request is for the entire life of the project. Please send me these notices and all documents relating to this proposed project.

Response 23

1. The preceding individual responses to each of the Commenter's concerns are intended to satisfy the request for clarification on points addressed in the Draft EIS/EIR. References to the Draft EIS/EIR, Supplement, or other portions of this Final EIS/EIR document have been provided, as appropriate.
2. Notification of public meetings on project proposals is provided by the County by public notice in accordance with CEQA and County Code requirements. Notification of BLM public meetings is provided by public notice in accordance with NEPA and BLM regulations and policy.

## LETTER 10: DOROTHY HARTE

Comment 01

1. The California Desert Conservation Area Plan and the the EMNSA Plan have no meaning if open pit cyanide leaching is an appropriate activity.

Response 01

1. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of the compatibility of the proposed project with EMNSA Management Plan.

Comment 02

1. The Applicant initiated an exploratory program in 1983, with *property acquisition*, exploratory drilling, and environmental studies. What studies were completed at that time?

Response 02

1. Early environmental studies consisted of an archaeological resources inventory, vegetation and wildlife studies and a visual impact evaluation. These studies were used as background information and were supplemented for the Draft EIS/EIR.

Comment 03

1. How would the project be handled, and how would the *public owners* be notified if the [gold] estimate is low by 50 percent or 90 percent?
2. What research has been done to determine if buying up gold jewelry and recycling it would be less expensive (certainly less destructive) than mining?
3. The EIR states that from this ore, Viceroy would expect to market *only 1 1/2 million ounces*. What will Viceroy do with the remaining 2,100,000 ounces?

Response 03

1. Discussion of project profits, gold estimates, and recovery is beyond the scope of evaluation necessary for this Final EIS/EIR.
2. A discussion of recycling gold as a method of acquiring it was provided in the Supplement (Section 4.5.4, Alternate Methods of Acquiring Gold) in response to Commenter's question.



3. Discussion of product marketing and gold distribution is beyond the scope of evaluation necessary for this EIS/EIR.

#### Comment 04

1. If "cyanide has been used in various processing methods to extract gold from ore for over 100 years," what is the new technology?
2. Since this is a "disseminated gold deposit," please explain the economic variables. Please explain why the "economically feasible" method was chosen rather than the "environmentally feasible" method since this land belongs to the American taxpayers. If carbon-in-pulp leaching is environmentally preferred, why is this method not *required*?
3. What economic and social benefits justify this project?

#### Response 04

1. Cyanide has been used since the 1880s to extract gold from high-grade ore. The technological advances that have contributed to heap leach mining over the last 20 years include research by the U.S. Bureau of Mines to adapt this process to the treatment of the lower-grade ore deposits typically found in the desert southwest, and an increased ability to economically mine large quantities of low-grade ore.
2. The primary economic variables for disseminated ore bodies are the cost required to extract the gold, concentration of gold in the ore deposit(s), the size of the deposit(s), percentage of recovery, and price of gold. The Castle Mountain disseminated ore bodies contain an average of less than 0.05 ounces of gold per ton of rock. Disseminated ore bodies with less than 0.015 ounces of gold per ton of rock are generally considered uneconomic at today's gold price. However, some operators are economically processing ore near this grade using improved operating efficiency derived from the large scale of operation used, which would typically be two or more times the 8,000 tons per day for the proposed Castle Mountain Project.
3. The Draft EIS/EIR demonstrates that the proposed project *is* environmentally feasible through the implementation of mitigation measures determined for each identified environmental effect. Other processing methods determined inappropriate in the Draft EIS/EIR, such as carbon-in-pulp leaching, are not necessarily environmentally preferable, just different. Most of the mitigation measures identified for the proposed heap leach mining would be similarly required



for carbon-in-pulp leaching. Additional mitigation measures associated with the carbon-in-pulp process would be tailings containment and destruction of residual levels of cyanide in those tailings.

#### Comment 05

1. The EIR states that this gold is necessary for national security. Please explain how U.S. security needs can be satisfied by mining companies owned by Japanese, Canadian, and Australian nationals.

#### Response 05

1. The Draft EIS/EIR evaluates the environmental effects of the proposed activity, which is to develop the Castle Mountain ore body as a private industry undertaking. However, the Draft EIS/EIR (page 3.2-1) did explain that:

"The Castle Mountain Project is proposed as a private industry undertaking. Federal Government policies encourage private enterprise in the economic development of domestic mineral resources to help assure satisfaction of the nation's industrial and security needs (Mining and Minerals Policy Act, found in 30 U.S. Code Section 21)."

Additional discussion of the importance of gold can be found in the Supplement (Section 4.5.4, Alternative Methods of Acquiring Gold).

2. Gold produced at mines operating in the United States is usually also sold to brokers in this country. It should be noted that the Applicant is a U.S. company incorporated in the State of Delaware. It will pay U.S. and California income taxes. As well, it will employ American workers and purchase many goods and services of American origin. Expenditures on wages, goods and services are estimated by the Applicant to exceed \$20 million each year.

#### Comment 06

1. ..."more than 10,000 mining claims throughout EMNSA..." Mining has been a continuous activity in San Bernardino County for the past century. "Most of the communities tended to be short-lived quickly exhausting the small deposits of high grade gold ore upon which they depended." This proposed project is "disseminated" gold. If mining high grade ore is short-lived, why will it take 10 years to mine "disseminated" gold? How many of the 10,000 mining claims have been sold for \$2.50 an acre? How many for \$5.00 an acre? How many for "fair market value"?

Response 06

1. Disseminated ore bodies such as the Castle Mountain deposits generally occur as large bodies of rock that require large capital investments to achieve the economics of scale needed to make such operation profitable. As a result, the time required to extract and process the ore is also considerable.
2. A discussion of the history of mining claim sales throughout the Mojave Desert is not germane to the evaluation of the environmental consequences of the proposed project.

Comment 07

1. ..."extraction and processing of gold would not diminish its usefulness, but would instead make the resource available for use by society." This portion of a sentence is incomprehensible. Please explain in plain English what is being said.

Response 07

1. The cited partial quote is best explained in its entirety in the context of the Draft EIS/EIR issue being addressed (page 9.1-2). This section, entitled Irreversible and Irretrievable Commitments of Resources, is required by environmental regulations to address the project's uses of nonrenewable resources. The Draft EIS/EIR states that:

"Extraction of the ore would gradually diminish the value of the Castle Mountain ore body until it could no longer be economically mined at current gold prices. This would represent an irreversible development of known gold reserves. However, extraction and processing of gold would not diminish its usefulness, but would instead make the resource available for use by society."

This statement is intended to explain that while gold is a limited resource, its development is not necessarily consumptive. Processing the ore body converts the resource to a useable form.

Comment 08

1. Thirty-five percent of the area of 2,735 acres, or 890-920 acres, will be "disturbed." Please explain how destroying almost 1,000 acres can have no effect on the environment. Please explain the discrepancies throughout the EIR using the figures of 890, 910, and 920 acres.



Response 08

1. A primary purpose of environmental impact evaluations is to identify potentially significant environmental effects and determine what mitigation measures should be incorporated to reduce those effects to an acceptable level such that no significant adverse effect would result. The Castle Mountain Project Draft EIS/EIR, Supplement, and this Final EIS/EIR have been prepared with that purpose in mind.
2. Guidance on the determination of significant effects, as provided in CEQA, relies on the assessment of project effects in the context of the resource sensitivity, and the available quantity of the affected resource. This does not mean that surface disturbances have no effect on the environment, but it does mean that size alone is generally not a sufficient criteria to judge the significance of a project's effect.
3. The calculated area of onsite disturbance in the Draft EIS/EIR is 890 acres. Acreages used to obtain this figure are shown in Figure 3.2.5 (Preliminary Site Plan). This figure was used when discussing onsite impacts from surface disturbing activities. An additional twenty acres were calculated to be disturbed for new offsite construction along the Searchlight Access Route. The figure of 910 acres was therefore used in the Draft EIS/EIR when describing the total project surface disturbance. The figure of 920 acres on page 8.3-2 at the cumulative impact analysis was a typographical error.

Comment 09

1. "Well field drawdown will be monitored on an annual basis." Who will monitor? Why not monitor monthly?

Response 09

1. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of the hydrologic monitoring program.

Comment 10

1. Water will be used primarily for the heap leach process and for dust control. Dust is endemic to the desert. Why use water for dust control when toxics from the heap leach process are the biggest concern, and that process will contaminate all the water used in the process?





Response 10

1. Dust control is required by the SBCAPCD to limit air quality impacts in compliance with State and National air quality standards (42 U.S.C. §7409; 40 CFR Part 50).
2. Water used for ore processing will be recycled and will not be suitable for other uses.

Comment 11

1. Please explain your conclusion that "project ground water withdrawals could greatly reduce or eliminate flow at Piute Spring...no noticeable effects...no significant impact...either during the operating phase...or at any time thereafter."

Response 11

1. The referenced citations are incomplete and quoting only a portion of the analysis presented in the Draft EIS/EIR can be misleading. The Commenter is directed to the detailed discussion of this issue that is presented in the Draft EIS/EIR (Section 4.3 and 5.3, Water Resources). The Draft EIS/EIR evaluations to assess the potential for ground water withdrawals were completed through investigation of existing data, collection of field data on Lanfair Valley geology and hydrology, consultation with experts, and computer modeling. Based upon the potential effects as described in the Draft EIS/EIR (Section 5.3, Water Resources), it was determined that project ground water withdrawals would not affect Piute Spring.

Comment 12

1. "Heap leach system shall be designed as a closed circuit system." ... "drip irrigation used to distribute solution directly on top of heaps...conventional sprinklers on side of heaps...solution shall be recycled...solutions transported in closed pipes...primary health concern - management of chemicals, especially chemicals containing cyanide...when pH of cyanide solvent is kept high (10) vapor pressure of the dissolved hydrogen cyanide is *reduced* and the chance of hydrogen cyanide volatilizing to the air is substantially *lowered*...cyanide does not accumulate with a small exposure over time...low chronic toxicity...protection of water quality is also provided by the reactivity of cyanide which results in its volatilization into the atmosphere...time and travel distance for degradation...cannot presently be predicted with sufficient accuracy...they represent an unquantifiable level of redundancy toward reducing the potential of exposure from this processing reagent." Please clarify all of the contradiction quoted above, and explain the incomprehensible jargon of the last partial sentence.

Response 12

1. The above phrases and partial sentences appear contradictory, as they have been taken out of context of the Draft EIS/EIR. The reader is referred to the text of the Draft EIS/EIR which should be read in its entirety for a better understanding of the analyses and conclusions.

Comment 13

1. On page 3-4-3 of the EIR, your consultant states "The area is designated as Class L (Limited Use) in the California Desert Conservation Area Plan and East Mojave National Scenic Area Plan. These plans and Federal policies provide for multiple land use, including mining. . . ." These statements are not true. Please refer to the BLM Public Lands Resource Update dated March 1987, page 2, "What are the four zones of use?" "*Class L* (Limited Use) these lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses, while ensuring that sensitive values are not significantly diminished. *Class M* (Moderate Use) these lands are managed in a controlled balance between higher intensity use and protection. A wide variety of uses, such as *mining*, livestock grazing, recreation, energy, and utility development are allowed . . . ." *Class L does NOT allow mining*. We will expect you to deny the above application.

Response 13

1. The project area is designated as Multiple-use Class L (limited). The CDCA Plan defines this as *lower* - intensity, carefully controlled multiple use of resources. It is implied that this is for *lower* intensity than Class M, which is *higher* intensity. The emphasis in Class L is not to restrict multiple use, but for "carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished" (see CDCA Plan, page 13 [BLM, 1980]). The Draft EIS/EIR (page 4.10-2) explains that mining and mineral exploration uses are permitted in Class L areas, subject to 43 CFR 3809 regulations and applicable State and local law, and identifies measures by which the project can be controlled or otherwise mitigated to protect other resources. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval. Although the recent amendments to the CDCA Plan (BLM, 1989) on page 2-5, changed the remaining Class M areas within the EMNSA to Class L, the BLM stated that the amendment was done to assure effective mining reclamation, which of course assumes that mining will occur within the EMNSA.

2. See Section 4.1.7 (Land Use) at this Final EIS/EIR for a discussion of project compatibility with the EMNSA.



## LETTER 11: JIM LEHMANN

Comment 01

1. [Page] 3.2-21 Gold Recovery Process [paragraph] 2 - Acid in contact with carbon which may contain cyanide may prove lethal. For a 70 kg human in ordinarily good health, 50 - 60 mg of cyanide may easily prove fatal. On a concentration basis 150 ppmv/v over 4 - 12 hours may prove fatal as may 300 ppmv/v for as little as one-half hour. With this in mind, what steps will be taken to preclude this?

Response 01

1. MSHA requires that acids and cyanide compounds be stored in isolated areas. See Response No. 03.

Comment 02

1. [Page] 3.2-22 Cyanide in Leach Soil - What happens to the cyanide in this leached soil? Is it destroyed or inactivated prior to using the soil for "revegetation"? If not, why not?

Response 02

1. As explained in the Draft EIS/EIR (Section 5.7, Environmental Health and Safety), after the final leaching had been completed, the spent ore heap would be decommissioned. This involves rinsing the heap with fresh water or neutralized solution to flush out the cyanide. The residual cyanide in the solution is then oxidized to reduce cyanide concentrations to levels specified by the RWQCB.

Comment 03

1. [Page] 3.2-29, Supplies [paragraph] 2 - Acids should never be stored adjacent to cyanide (or alkalis). How will these be stored?

Response 03

1. Acids and cyanide would be stored in physically isolated areas. As stated in the Draft EIS/EIR page 5.7-4: "Each storage area would be surrounded by dikes or curbs capable of containing fluids in the event of a spill." A spill prevention control and preparedness plan will be developed as required by the County Department of Environmental Health Services pursuant to State law, to address the specific design considerations of reagents storage. The plan is required as a Draft EIS/EIR mitigation measure and must be completed prior to initiation of operations using hazardous materials.



Comment 04

1. [Page] 3.2-32, Waste Contaminant and Disposal [paragraph] 3 - How are the "solvents and other chemicals" to be detoxified onsite? Will specially trained personnel effect the detoxification. What kind of process and/or equipment is necessary? Why isn't this mentioned in the EIS/EIR?

Response 04

1. Cyanide solutions will be detoxified onsite as required by the RWQCB. No special equipment is necessary. Cyanide detoxification involves the addition of a strong oxidant, such as hydrogen peroxide to the solution. The cyanide is then converted into compounds of carbon and nitrogen that are much less toxic. Solvents and other recyclable fluids will be sent to recyclers.

Comment 05

1. [Page] 3.3-12, Proposed Onsite Generation - Why isn't natural gas used from the beginning if they plan to use it at a later date? If it is one of economics, then "we the people of the United States" should be able to exercise our rights to not have to put up with degraded air to save a few bucks for "their company."

Response 05

1. Conversion to natural gas from propane and diesel fuels for electrical power generation was planned to occur approximately during year two or three of the project. This consideration was based on startup scheduling. The air emissions would not change substantially. As discussed in the Supplement, a decision was made subsequent to the time the Draft EIS/EIR was prepared that the project would install only propane-fired engines for power generation. No diesel-fired engines would be used for power generation.

Comment 06

1. [Page] 5.6-13, HCN Considerations - What are the specific and precise steps which the Corporation will take to ensure that any emitted HCN doesn't poison plant personnel, the public, and *other living things*?

Response 06

1. As discussed in the Draft EIS/EIR (page 5.6-13), monitoring of HCN concentrations at other similar operations has indicated that the concentrations are commonly about 2 to 3 ppm, which

is well below the allowable limits. The Applicant/Operator will be required to monitor HCN concentrations in accordance with standard MSHA (30 U.S.C. §801 *et seq.*) procedures to protect employees and the public.

#### Comment 07

1. [Page] 3.5-8, Traffic [paragraph] 3 - What are the specific methods of enforcement which the corporation will affect to preclude fugitive dust generated by vehicular traffic. For example, will first time offenders be given a written as well as a verbal caution? Second time offenders suspended without pay for a length of time and third time offenders dismissed for cause and therefore ineligible for Workman's Unemployment Insurance.

#### Response 07

1. As discussed in the Draft EIS/EIR (Section 6.6, Air Quality), fugitive dust would be controlled primarily through used water or surface-binding agents (such as magnesium chloride, calcium chloride, or lignon sulfonate). The potential for employees to create dust should therefore be minimized. Van pooling and busing would be provided by the operator to reduce traffic volumes.

#### Comment 08

1. [Page] 6.6-3, HCN Emissions Control - Will the corporation provide the public with assurances that HCN emissions of an accidental nature will be adequately compensated by liability insurance? Will this liability carrier be fully apprised of the attendant risks prior to underwriting the corporation? Will the corporation also ensure that only adequately experienced personnel will direct and cause all cyanide additions, transfers, etc. in the way of a P.E. or registered chemist with *actual* expertise in cyanide handling, including but not limited to:
  - Emergency procedures
  - Neutralization
  - Personnel safety procedures and/or first aid

In the sentence of the aforementioned section..."In addition, the Applicant shall periodically perform airborne surveys to verify potential public exposure to cyanide is inconsequential." Please define periodically more precisely as once per shift, twice per week, once per year etc. Also be quite specific in defining inconsequential.



Response 08

1. The Applicant has indicated that it will carry liability insurance, using an insurance carrier who is experienced in activities associated with this type of industry. In addition, the Applicant will have on its payroll, a number of personnel trained in procedures to be followed for the safe handling, recovery, and cleanup of cyanide in the event of an accident.
2. Personnel handling cyanide and other reagents will be required to participate in training sessions before handling these reagents. Refresher sessions will be scheduled at regular intervals to ensure operators remain familiar with the procedures. Teaching aids will include product information fact sheets, and training videos prepared by the chemical manufacturers, MSHA, and industry health and safety support groups.
3. Security personnel and senior supervisory staff will be trained in first aid procedures for all types of industrial accidents, including those that involve cyanide. First aid kits will have antidotes to counter the effects of cyanide poisoning.
4. Sampling of cyanide concentrations in the air above the heap leach piles will initially be conducted on a daily basis. MSHA requires that HCN concentrations be kept below 10 parts per million (ppm) and experience at other mines indicate measured concentrations will be less than 2 to 3 ppm. It is expected that similar readings will be encountered at the Castle Mountain Project. Once it is confirmed that HCN concentrations are as low as anticipated, monitoring will be cut back to quarterly or semi-annual readings. Readings of 2 to 3 ppm adjacent to the top of the leach piles will mean concentrations several orders of magnitude lower in areas accessible to the general public. The public will not have access to the leach piles, and since HCN is lighter than air, it will rise into the atmosphere, where it will be rapidly diluted, rather than concentrating near ground level.

Comment 09

1. Additionally, since former Senator J. Tower was passed over for a responsible position due to his alleged excessive drinking, the captain of an Exxon vessel which wreaked havoc on the terrestrial environment, and a British captain removed from his vessel - both of these for alleged excessive drinking, there is another aspect which must be addressed. What policies will be established by the corporation to preclude incompetence of office at least from excessive drinking?

Response 09

1. The Applicant has indicated that alcohol will not be permitted on the project site. Employees or visitors found to be intoxicated will not be permitted on the site.



## LETTER 12: JOHN C. MANNING

Comment 01

1. The scoping process appears to have identified the primary issues that might impact the environment of the proposed project. The Potential Effects summarized in Table 1.1 are clear and concise statements about things that might adversely affect the project environment. Finally, the proposed Mitigation Measures of Table 1.1 would seem to answer the concerns raised by the hypothetical Potential Effects. Assuming that Table 1.1 accurately reflects the original EIS, I think the study has been extremely comprehensive, and it appears to be a first-rate evaluation of potential environmental constraints affecting the Viceroy project.

Response 01

1. Comments noted.

Comment 02

1. Since water resources is my main area of expertise I would like to briefly discuss this section of the EIS. I have had some experience with cyanide heap leach gold mining, and I have had considerable experience in desert hydrology, particularly ground water hydrology.
2. Proposed ground water pumpage of 450 gpm is less than 200 acre-feet per year. Considering natural recharge from precipitation, the size of Lanfair Valley and the very limited ground water withdrawals now being made, it is questionable whether measurable drawdown would occur at even relatively short distances from the well field. One or two slim-hole piezometers, strategically located, would answer this question easily and cheaply.
3. The occurrence of several springs in and around the valley is evidence that some of the aquifers are full to the spill point under prevailing conditions. It is doubtful that the wells proposed for this project would affect spring flow unless they were drilled close to the spring opening.
4. Although little is known about the residence time of cyanide in ground water, I know of no authenticated cases of cyanide poisoning in ground water that were related to heap leach mining. With the requirements for monitoring wells and the vigorous enforcement of sampling and analytical measures by California authorities, this danger is very small, indeed. And the miner doesn't want to lose any of his cyanide solution -- it has gold in it!



5. The Mitigation Measures to deal with stormwater run-off sound all right if they are carried out faithfully and completely. Most people tend to underestimate potential stormwater runoff volume and rate -- until they actually experience a real flash food. I recommend that the miner in this case read a full account of the storm run-off in nearby Eldorado Canyon on 14 September 1974.

Response 02

1. Comments noted. Implementation of the MCP will ensure compliance (see the Supplement, Appendix E, for a discussion).



## LETTER 13: KAREN L. MCKEE

Comment 01

1. The mine will be placed in the middle of an area which is described even in BLM planning documents as containing unique scenic resources. How are billowing dust clouds from heavy equipment, open pits hundreds of feet deep covering many acres and piles of ore tens of feet high covered with plastic netting consonant with the scenic value of this enchanting land?

Response 01

1. The Draft EIS/EIR was prepared, in part, to evaluate the compatibility of the proposed project with the EMNSA. Project dust would be controlled through use of surfactants and water, as discussed in the Draft EIS/EIR (Section 5.6, Air Quality). Compatibility of the proposed project with the EMNSA is also discussed in Section 4.1.7 (Land Use) of this Final EIS/EIR.

Comment 02

1. The mine will be in an area which is being considered for a national park. It would be tragic if this mine were to destroy the landscape just as it became a national park. It would be even more tragic if national park status was delayed or denied because of the existence of this and similar mines. It is incumbent on the BLM to determine the impact of the mine on proposed Mojave National Park *before* digging begins.

Response 02

1. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of the proposed Mojave National Park.

Comment 03

1. The BLM plan for the east Mojave designates Lanfair Valley as a low-intensity use area. By what torture of the language is open pit, heap leach mining defined as low-intensity land use? The citizens of San Bernardino County participated in the process which resulted in this low intensity designation and are looking to the BLM to abide by and implement the plan as written.

Response 03

1. The project area is designated as Multiple-use Class L (limited). The CDCA Plan defines this as *lower* - intensity, carefully controlled multiple use of resources. It is implied that this is for *lower* intensity than Class M, which is *higher* intensity. The emphasis in Class L is not to restrict multiple use, but for "carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished" (see CDCA Plan, page 13 [BLM, 1980]). The Draft EIS/EIR (page 4.10-2) explains that mining and mineral exploration uses are permitted in Class L areas, subject to 43 CFR 3809 regulations and applicable State and local law, and identifies measures by which the project can be controlled or otherwise mitigated to protect other resources. Although the recent amendments to the CDCA Plan (BLM, 1989) on page 2-5 changed the remaining Class M areas within the EMNSA to Class L, the BLM stated that the amendment was done to assure effective mining reclamation, which of course assumes that mining will occur within the EMNSA.

Comment 04

1. The destruction of animal and plant life habitat will be extensive. One of those most severely affected will be the desert tortoise. Most life in the desert is lived on the edge. It doesn't take much added adversity to push desert species into extinction. The desert tortoise is now threatened with exactly that because of the strains human activities have placed on it. How much poorer the desert will be without the little tortoise! We have no right - *you* have no right - to further endanger this animal in the name of a few ounces of gold.

Response 04

1. The Draft EIS/EIR identifies potential impacts in Section 5.5 (Wildlife) and recommended measures in Section 6.5 (Wildlife) designed to ensure that the project would not endanger or severely affect the desert tortoise. An onsite burrow investigation indicated that few tortoises inhabit the high elevation project area. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for additional discussion on the tortoise.

Comment 05

1. The Draft EIS/EIR is totally inadequate in its examination of the effect of this project on the water resources of the region. Common sense tells us that an arid region such as the east Mojave cannot sustain ground water depletion at the rate of 450 gallons per minute without ill effects. The statements made by the writers of this EIS/EIR that there will be no significant effect on water levels at Piute Springs would be laughable, were the consequences not so serious. Hydrogeologists commenting at the hearing on this project, which was held in



San Bernardino on April 18, indicated that the ground water analyses made for the EIS/EIR were inadequate because they failed to document the water pathways between the project site and Piute Springs, and because they used mathematical modeling techniques which have been shown to have no predictive value. Without thorough analysis, how can the EIS/EIR state with such assurance that the springs will not be affected? And if the springs *are* affected, what will happen to the bighorn sheep? It will be too late for "mitigation."

#### Response 05

1. The ability of an aquifer to sustain ground water depletion is dependent upon a number of factors, and must be determined through detailed field evaluations and data analysis. Mathematical modeling techniques are often effectively employed to augment such investigations. The computer model used for the Draft EIS/EIR analysis is a standard model employed by the USGS. The evaluations completed for the Draft EIS/EIR (Section 5.3, Water Resources) did not, however, rely solely on these modeling techniques. Relatively simple calculations based upon the size of the aquifer and total project withdrawal (over the 10 year life of the project) initially determined that there was little potential to affect Piute Spring. Subsequent mathematical modeling evaluations verified that this conclusion would not change over time.
2. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussion of the bighorn sheep.
3. A hydrologic monitoring and contingency program would be required, as recommended in the Draft EIS/EIR. This program is discussed in Section 4.1.5 (Water Resources) of this Final EIS/EIR.
4. See Section 4.1.5 (Water Resources) of the Final EIS/EIR regarding other opinions on hydrologic impacts to Piute Spring.

#### Comment 06

1. The price of the water to be used in this project is also an issue. This is a desert...

#### Response 06

1. The price of water is not an issue within the intent or required scope of an EIS/EIR. The purpose of environmental evaluations is to determine potential physical effects. See Section 4.1.5.4 (Water Use) in this Final EIS/EIR for a further discussion of this subject.

Comment 07

1. The "reclamation" plan put forth by the EIS/EIR is ridiculous on its face. Leaving huge holes in the ground and piles of dirt, rock and debris which have been painted like a Hollywood set, does not constitute reclamation. Plans to revegetate are unworkable. Again, we're talking about the desert where it takes years for plants to grow a couple of inches; where optimum conditions must exist for seed germination; where infrequent but violent rains falling on sandy soil wash young plants away. The BLM will utterly have failed in its duty to safeguard the resources of the area if it allows this project to proceed without guaranteeing that the pits will be filled in, the piles of rubble leveled and that the soil and ground water will be free of cyanide residue. The bond posted by Viceroy ought to be *very* large. Large enough to guarantee that although the vegetation will take many decades to regenerate the Mojave will at least not resemble a moonscape and not be rendered uninhabitable (*sic*) by hazardous waste.

Response 07

1. The Draft EIS/EIR recommends numerous reclamation measures in Section 3.2.8 (Reclamation) designed to minimize any significant environmental impacts and to enable the project to comply with the requirements and intent of 43 CFR 3809 and SMARA. It is demonstrated that these objectives could be met without attempting to recreate the pre-mining topography. The Commenter is referred to Section 3.3 (Alternative Mitigation Measures Considered) of this Final EIS/EIR for a further discussion of backfilling the mine pits and to Section 4.1.3 (Administrative Considerations) for a discussion on bonding.
2. Decommissioning of project facilities would involve rinsing the leach piles and neutralizing the cyanide solution according to procedures that are required by the RWQCB to a level where the cyanide would no longer pose a threat to water quality. Residual cyanide in the rinsed leach piles (spent ore) would then continue to degrade naturally. Tests completed to characterize this material demonstrated that the levels of extractable metals are considerably less than the soluble threshold limits of concentrations that would be of concern under the California Code of Regulations, Title 22 for designation as a hazardous waste. There will be no hazardous or toxic wastes left on site after the project has been decommissioned.

Comment 08

1. The EIS/EIR is entirely inadequate regarding monitoring the compliance of Viceroy with the conditions imposed on them by this environmental assessment. If the BLM is charged with the task of monitoring the mine's operations, what criteria will it use? The mitigation





proposals have not been reduced to measurable data. Before this mine should even be considered for approval, the environmental impacts and the plans for overcoming them must be quantified so that there will be a standard against which BLM can monitor compliance.

#### Response 08

1. Adoption of a MCP by the agencies is required should the proposed project be approved. A draft of the proposed compliance monitoring program for this project was included in the Supplement (Appendix E, Draft Mitigation Compliance Program).

#### Comment 09

1. The plans for the project fail to include a method to handle a worst case failure. The proposed bond is inadequate even to guarantee reclamation. It will certainly be inadequate for a major cleanup of ground water if the cyanide gets away from the leaching pads or if a major wildlife protection effort becomes necessary as a result of actions at the mine. If there is anything to be gained from the Exxon Valdez accident it is that we can learn that people must be willing to contemplate the unthinkable. No one in government or at Exxon believed such a disaster would happen, so the quick response plan which could have minimized the damage was not maintained ready for immediate implementation.

#### Response 09

1. CEQ regulations (40 CFR §1502.22(b)) do not require "worst case" analysis. Instead, the regulations focus on "reasonably foreseeable" consequences. The analysis of such impacts must be supported "by credible scientific evidence" and "not based on pure conjecture" and be "within the rule of reason." The Draft EIS/EIR was prepared as an assessment of the reasonably foreseeable consequences of the Proposed Action, since a worst case scenario based upon pure conjecture is not required by CEQA or NEPA. Bonding should likewise be based upon the credible scientific evidence and reasonably foreseeable consequences. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for a further discussion of bonding.



## LETTER 14: THOMAS J. MYERS

Comment 01

1. Concerning Figure 4.3.6, the evidence provided by the water levels in the wells and the discussion concerning the geology does not support the location of the equipotentials along the Piute Range. The Piute Range has a much smaller hydraulic conductivity than the alluvial fill in the Lanfair Valley and the ridges of the range provide a minor recharge zone. It is more likely that a ground water divide exists along the Piute Range. If flow does occur under the Piute Range, the gradient would increase to 4.5 percent and there should be more springs along the elevation of the Piute Gorge Spring. This comment implies the total basin area draining through the Piute Gorge increases which means the spring represents more of the total recharge to the basin.

Response 01

1. The potentiometric contours will steepen and become more closely spaced beneath the Piute Range because the volcanics do have a significantly lower transmissivity than the alluvium. However, the volcanics do have a finite permeability and the several hundred feet difference in the water levels in the valleys results in a west to east flow beneath the range.
2. Precipitation in the vicinity of the Piute Range generally will be less than eight inches, because of the location and relatively low elevation (Environmental Solutions, Inc., 1989). As a result, the Piute Range is not expected to contribute significant recharge to the Lanfair Valley aquifer. Assuming some recharge could occur along the narrow ridge width, a ground water mound would not occur because the infiltrating water would reach ground water at the location of the relatively steep gradient between the two valleys. If one were to assume that a much larger amount of rainfall and infiltration occurs at the Piute Range, it would also be appropriate to assume that recharge to the Lanfair Valley is much higher. This assumption would be unconservative in that it would further decrease the likelihood that pumping in the northern portion of Lanfair Valley would influence conditions at Piute Spring.
3. As part of the original geologic and hydrogeologic investigation, as discussed in Draft EIS/EIR Sections 4.2 (Geology) and 4.3 (Water Resources) and in the detailed report (Environmental Solutions, Inc., 1989), an evaluation was made to determine why additional springs do not exist along the Piute Range. This evaluation showed that Piute Gorge is the only location where a valley on the east side of the range has been eroded deep enough to intersect the natural ground water gradient. Therefore, except at Piute Spring, the ground

water flow from Lanfair Valley enters into the Piute Valley aquifer below the ground surface. The steeper gradient (4.5 percent) mentioned by the Commenter would result in the ground water being even deeper below the range than assumed in the Draft EIS/EIR, further reducing the potential for other springs to occur.

4. For the reasons stated above, it is concluded that the analyses presented in the Draft EIS/EIR for climatic and hydrogeologic conditions of the Piute Range is appropriate and conservative. It is not appropriate to change the estimated distribution of Lanfair Valley drainage which occurs at Piute Spring.

#### Comment 02

1. The ground water mound shown around five wells on the south boundary along with water elevation in wells 27BSI and 33DI and the impermeable rock in Hackberry Mountain and Woods Mountain indicates a ground water divide along the south side of the basin. This again increases the recharge area draining to Piute Gorge.

#### Response 02

1. A large number of wells exist in the vicinity of wells 27BS1 and 33D1 (see Draft EIS/EIR Figure 4.3.6, Estimated Potentiometric Surface Map) which consistently show the gradient in this area to be predominantly toward the south and Fenner Valley. It would be inconsistent to assume that all flow in this portion of the valley would turn and flow toward the northwest. The most conservative assumption is that all recharge from the southwest portion of Lanfair Valley is toward Fenner Valley. To assume that flow is toward Piute Spring would be unconservative because that condition would further reduce the potential for water withdrawal at the proposed well field to adversely affect Piute Spring.
2. Small amounts of mounding may occur at individual high bedrock zones across the southern Lanfair Valley boundary. However, precipitation and infiltration in this area are expected to be limited (see Figure 3.9 and Section 3.5.3 of *Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring*) because of the generally low elevation conditions. Continuous mounding could not occur in water gaps between the higher topographic features. The assumption of subsurface flow from the southwestern portion of Lanfair Valley into Fenner Valley is considered to be appropriate and conservative.



Comment 03

1. Figures 4.3.1 and 4.3.6 show surface water drainage divides crossed by washes. This shows a certain sloppiness of work, but more importantly, if those washes are also paths of ground water flow (disputed in comment 2), the existence of the mountains would dam the water causing a high water table in the narrow washes. The high water table should support a community of water seeking plants (such as mesquite). These are not mentioned in the EIS and I do not recall having seen any during my visits to the area, therefore, I conclude in support of Comment 2 that ground water does not escape to the south through these mountains.

Response 03

1. The same line designation was used in the figures to indicate both the limits of Lanfair Valley and the drainage divides which form that boundary. As the Commenter notes, and would be evident to all hydrogeologists, the divide line does not actually extend across drainages which carry run-off out of the valley. Draft EIS/EIR Figure 4.3.1 (Lanfair Valley Surface Water Drainage) shows the location where these surface water drainages exist.
2. Shallow ground water may exist in some of the water gap areas. For example, in the vicinity of the Vontrigger Spring in the wash between Vontrigger and Hackberry Hills (Draft EIS/EIR Figure 4.3.4, Lanfair Valley Surface Water Drainage). However, the combined area of alluvium in the water gaps from the southwest subbasin is large enough to transmit the estimated 860 acre-feet per year of recharge to this area. Additional subsurface flow capacity would occur in portions of the bedrock where small mounds do not exist, especially toward the western end of the south boundary where the ground water gradients are steepest. Therefore, there is no reason to expect that shallow ground water must exist at the water gap areas.

Comment 04

1. Ignoring the arguments above, I am able to verify the water balance for the basin presented in the EIS. If the ground water divides mentioned in comments 1 and 2 (above) exist, approximately 2000 acre-feet of water per year leaves the basin through the Piute Gorge area.





Response 04

1. Comment noted. As noted in Response No. 02, the assumption that all ground water from Lanfair Valley leaves through the Piute Gorge area would result in less potential for impacts resulting from the proposed pumping. In this case, it is more conservative to assume that a portion of the flow is to the south.

Comment 05

1. An assumption allowing me to verify the water balance in comment 4 (above) is that the recharge estimates are correct. I am not familiar with the relation of recharge and annual precipitation used in the EIS, but I question its applicability here. If it was derived for the Great Basin portion of Nevada, it is totally inapplicable because of differences in rainfall pattern. The project basin receives a substantial portion of its rainfall in high intensity events. The Great Basin receives most of its precipitation from snow, which recharges much better. Rainfall must first infiltrate and replenish soil water before it can recharge the ground water. This is a rare occurrence in the Mojave Desert because of the higher intensity rainfall events. Recharge estimates for the Lanfair Valley may be grossly overestimated.

Response 05

1. The recharge technique used is often employed for southern Nevada basins. For example, under a cooperative program between the USGS and the Nevada Division of Water Resources, the technique was applied to Piute Valley by Rush and Huxel (1966) and to Ivanpah Valley by Glancy (1968). Lanfair Valley is situated between Piute Valley and Ivanpah Valley, but at a considerably higher elevation. Of these three applications, the technique should be most applicable to Lanfair Valley, because of its higher elevation.

Comment 06

1. During the occasions I have visited Piute Creek, it was certainly flowing greater than 45 gpm as reported in Table 4.3.1. This point is crucial, because measured surface flow represents up to 30 percent of the value of total ground water movement through the basin. This is downstream of much riparian vegetation whose use is another five percent (1 mile \* 100-foot width \* 7 feet per year). These percents assume the recharge estimate is accurate (I do not) and that all discharge from the basin is through Piute Gorge. If I am correct in assuming the majority of flow exiting the basin is through the Piute Gorge, the surface flow and riparian vegetation usage represents most of the recharge to the basin because the high bedrock causes most of the flow to surface.

Response 06

1. The basis for quantitative estimates provided in this comment are not evident. However, it appears that this comment is directed toward illustrating the sensitive characteristics of the Piute Spring area. This sensitivity has been recognized throughout the Draft EIS/EIR analysis, and is the basis for the various analyses performed to evaluate potential impacts of mining-related pumping and conditions of the spring.

Comment 07

1. The value of hydraulic conductivity is very low. I am able to verify the travel times in the EIS, but I question the value of K. I did not see a mention of the texture of the alluvium in the basin; the reported K values are that of fine sand or of a gravel with interstices filled with sand and clay. I do not question the well tests at the proposed well field, however I do question their applicability to the entire basin. A value for colluvial material is easily 100 times higher than the reported values. This would reduce the travel time to eight years.

Response 07

1. Valley fill downhill from the West Well Field, in the direction of Piute Spring, is farther from sediment source areas and would be expected to be generally finer grained than that in the well field (Environmental Solutions, Inc., 1989). Intergranular permeability tends to decrease with decreasing particle size. The lithologic logs of wells PS-1 and PS-2 as well as field observations of clays and silts in the vicinity of Piute Gorge are further evidence of fine-grained deposition representative of playa or lacustrine deposition at the distal end of alluvial fans.
2. For the reasons stated above, K is expected to generally decrease away from the well field in the direction of Piute Spring. In addition, the alluvial thickness is expected to increase in the direction of Piute Spring. Both of these factors would cause the calculated ground water flow times to increase and, therefore, be *underestimated* in the Draft EIS/EIR.

Comment 08

1. In summary, I view the Lanfair Valley and aquifer as a large lake holding a million or so acre-feet of water. The only inflow is recharge which is less than one percent of the total storage; the only outflow is through the Piute Range near the Piute Gorge. Since the inflow approximates the outflow in a steady state system, the removal of several years worth of recharge must affect the outflow at Piute Gorge. The remaining, unanswered (because of

insufficient conductivity and initial condition data) question is whether the effect would be spread over a 1000 years or over 10 years. The answer is of obvious importance to Piute Creek.

#### Response 08

1. For reasons discussed in earlier responses, the appropriate, conservative model for the basin is to assume that all ground water flow from the basin is not only at Piute Gorge. With this difference aside, the basic concerns expressed in the Commenter's summary statements are exactly those which resulted in the extensive geologic and hydrologic investigations (Environmental Solutions, Inc., 1989). The analyses performed were specifically directed toward determining the degree to which the Piute Spring area may be affected and the approximate time when such an impact would occur.



## LETTER 15: JOHN R. ODERMATT

Comment 01

1. Geology - The section concerning the Geology of the Castle Mountain area as presented in the EIS appears to be derived from a literature review concerning mostly bedrock Geology. I suspect that Viceroy Gold Corporation has more detailed geological information, but this may be of a proprietary nature if it concerns the economic development of the gold resources under consideration. I am concerned with the paucity of original work of a site specific nature addressing the bedrock (e.g., older than Quaternary) and the more recent sediments. A more detailed assessment of site Geology should be made to address problems concerning:
2. Local heterogeneity of Tertiary - Quaternary deposits. These rocks will be important to consider if potential effects of ground water pollution are to be adequately assessed in the study. The Quaternary to recent sediments need to be accurately assessed in order to establish an effective ground water monitoring program which should be required for the life of this project. The Quaternary Geology of the region was very general and no attempt was made to present a coherent picture (e.g., lithologic sections, detailed cross sections at the site, drilling or trenching logs, well logs, etc.) of this important topic. It does not suffice to say that there is a significant Pleistocene section and supply a general lithologic description of these sediments!
3. Locate and identify local and regional volcanic features and lithologies. The young age (Quaternary) of volcanic rocks in the area suggest that there may be local faults which were associated with volcanism. A combination of aerial photo/satellite imagery may be useful in identifying disruptions in local ground water flows (vegetation anomalies?) associated with recent faulting.
4. The porosity and permeability data presented in the EIS for volcanic rocks are not representative of the actual permeability of these rocks in the field. Volcanic rocks are full of fractures (e.g., breccias), textures and fabric elements (flow structures) which contribute to the field permeability of these rocks. An example of this is known from the petroleum literature as the oil field at Railroad Valley, Nevada produces oil and water from volcanic rocks in the subsurface!



### Response 01

1. The Draft EIS/EIR (Section 4.2, Geology) was prepared using a combination of literature data, project-related borings, aerial photograph interpretations, and field mapping. Because of the separation at the proposed West Well Field and mine areas and the interest in Piute Spring, the geologic interpretation effort was much more extensive than would normally be conducted during analyses for a project of this type. In addition, detailed subsurface investigations would be required by the RWQCB for the final design of key facilities, such as the heap leach pads and solution storage tanks.
2. Site geologic exploration data has been used to the extent appropriate for the Draft EIS/EIR geologic analyses. More detailed site geologic conditions are available in a paper by Dr. Harold Linder, titled *Castle Mountain Gold Deposit*, which appeared in the June, 1989, issue of California Geology.

### Comment 02

1. Hydrogeology - I agree with Dr. Robert Curry (Watershed Group Consultants - see public scoping volume of EIS package), concerning the lack of "actual" hydrogeologic data presented in the EIS and the numerous assumptions which are made in defense of the statements in the EIS. If ground water resources are to be accurately assessed, the EIS should include data for specific storage and porosity of sediments, the distribution of sediments in the zone of saturation, and variations in the saturated thickness across the site and in adjacent areas.
2. Reference was made to a ground water balance, but the numbers used to assess the "safe yield" question for the basin were not presented in the EIS. In regions such as the Castle Mountain area we are often engaging in the "mining of ground water resources." It is very probable that Dr. Curry is correct in his assessment that an overdraft of local ground water resources would occur.
3. I suspect that there are "geological" controls on the distribution of ground water resources within the basin (e.g., zones of high permeability associated with the distribution of lithologies and/or fractures in the basin). Given the lack of "hard data" (from pumping tests and monitoring wells) presented in the EIS concerning the hydrogeology and the assumptions made in the ground water model (i.e., radial dispersion of the cone of depression), I do not see how the effects of ground water withdrawal required by this project can be accurately assessed by the Applicant.



4. These factors are important in an examination of the distribution of ground water resources in the basin, and in the evaluation of the potential distribution of ground water pollution sourced at the site.

#### Response 02

1. Much of the extensive basin geologic and hydrologic interpretations and analyses presented in the Draft EIS/EIR was developed in direct response to concerns raised by Dr. Curry during the scoping period. The Draft EIS/EIR discussion is a summary of the detailed technical report (see Environmental Solutions, Inc., 1989). The Commenter is referred to that technical report for additional details concerning each of the investigations undertaken for the Draft EIS/EIR water resources analysis.

#### Comment 03

1. Hazardous Materials - The cyanide leach process is fraught with potential pollution problems if the material is not handled properly. This topic was addressed by the EIS in an effective manner. However, I want to point out several reservations I have about the proposed process.
2. The process includes the maintenance of the cyanide solution at high pH values to help prevent the escape of HCN gases. I am concerned that the pH will naturally change as the solution percolates the leach material (ore) and it will be expelled at a pH considerably lower than that of the primary cyanide solution. This process will take place at a site where the temperature range can be from 8 to 109 degrees F. I am concerned that the formation and escape of HCN under these conditions will be unavoidable unless the process is fully contained.
3. The soil and areas adjacent to the site contain clays of a volcanic origin (page 4.2-15). The combination of an alkaline cyanide solution in the presence of free calcium carbonate and smectite clays is "*not effective*" in the containment of cyanide migration in the subsurface (Canter, Knox and Fairchild, 1988, page 157). On the contrary soils with low pH, in the presence of kaolin, chlorite or gibbsite type clays and the presence of iron oxides tend to attenuate the migration of cyanide species. I would suggest that all of the holding ponds and piping which is designated to hold the cyanide solution should be set in a base of kaolin or gibbsite type clay. This would help to contain any accidental leakage from these facilities during the life of the operation. And "*note*", the clays in the vicinity of the site are *not* suitable for this purpose!!!!



4. To sum up, I have many reservations about the use of this method for the mining project at Castle Mountain. I am very concerned about the potential to pollute ground water resources which exist in the area. I am also concerned that the Draft EIS submitted by Environmental Solutions (Irvine) for Viceroy is seriously deficient in its analysis of the Quaternary - Recent Geology of the site and its evaluation of ground water resources in the region. I would suggest that these items be re-evaluated in more detail before permits are granted for this operation.

#### Response 03

1. Extensive experience in the United States for more than a decade using the cyanide solution leaching method for recovering gold has consistently shown that HCN releases above acceptable levels do not occur. MSHA requires that HCN concentrations remain below that level which could adversely affect employees in work areas for eight hours each day.
2. Volatilization of HCN does occur from heap leach pads. However, the rate at which volatilization takes place is so slow that the HCN evolves at very low concentrations. As HCN is lighter than air, the concentration is further reduced as the HCN rises into the atmosphere. The range of temperatures cited by the Commenter are similar to those encountered at other heap leach sites, and no problems have been reported. The Commenter is directed to Section 5.6.1.4 (Hydrogen Cyanide Considerations) of the Draft EIS/EIR for additional information on this issue.
3. The RWQCB will require special controls and monitoring for each facility containing cyanide solution. These requirements will be designated in response to the California Porter-Cologne (Clean Water) Act (Cal. Water Code §13000 *et seq.*) or Article 7 of Title 22, Subchapter 15, Land Disposal Regulations.
4. It is agreed that clays in the local quarries are not suitable, that is why the Applicant proposes to use synthetic liners beneath the pads and storage basin, rather than local "clays." Use of synthetic liners was discussed in the Draft EIS/EIR (Section 3.2, Proposed Action).

## LETTER 16: BRUCE M. PAVLIK

Comment 01

1. The document assumes the success of a poorly defined and highly speculative revegetation program (page 1.1-11). Quantitative goals for artificial and natural recovery need to be established as the responsibility of the Applicant (Viceroy Gold Corporation) prior to issuing the permit. Without such clearly defined goals and measures of success, we have no guarantee that any significant amount of revegetation, by dominant, native species, will occur as implied in Figures 5.8.2, 5.8.3 and 5.8.4. How much reconstructed plant cover will the Applicant be legally required to produce? What will the final species composition be when the company is allowed to recover its bond? The words "feasible" and "reasonable" are used to answer these questions in the document, but they do not indicate the actual commitment needed to revegetate arid lands to meet compliance with SMARA. This document does not present clear goals for reclamation of public land, nor does it address the many technical, legal, and financial issues that are of central importance to all mitigation efforts.

Response 01

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR for a discussion of onsite vegetation recovery.
2. There is no SMARA requirement for a specific amount of plant cover to be accomplished. The goal of revegetation, as provided through SMARA, is for the reclaimed site to be usable for alternative land uses, which at this site include wildlife, grazing, recreation, and mining. Recovery of the revegetation component of bond will be evaluated by the BLM and County based on successful completion of reclamation activities. For revegetation, the Applicant will be required to achieve revegetation to minimum standards prior to release of the bond. These standards will include plant density and diversity (species composition) and are discussed in Section 4.1.4.2 (Revegetation) of this Final EIS/EIR.
3. The words *feasible* and *reasonable* were used in the Draft EIS/EIR to provide the agencies flexibility in determining acceptable levels of revegetation since specific standards must be set based on the revegetation experts in light of what is reasonably feasible at this particular site, within a given time frame. Certainly, a minimum acceptable success would be a recovering vegetation community, based on the natural revegetation experienced at adjacent disturbed sites. Definition of specific composition is not required at this time for the EIS/EIR to satisfy compliance with NEPA, CEQA, or SMARA.





### Comment 02

1. The time frame for revegetation and monitoring needs rigorous definition. "Long-term," as used in the document, could be relative to the length of the project (10 years) or relative to the length of time required for meeting revegetation goals (50 to 100+ years). Only the latter is acceptable from an environmental impact perspective. I also question whether or not the bond money can be held for the amount of time needed to meet revegetation goals. This should be required so that the Applicant has a good incentive for achieving those goals, even after the life of the project.

### Response 02

1. Since revegetation could be established based on an acceptable planned density and diversity within a few years after project termination, monitoring the site for 50 to 100 years is considered unnecessary. Revegetation that has been observed at onsite areas 30 years following disturbance (see Section 4.1.4.2, Revegetation, of this Final EIS/EIR) demonstrates that a viable community can be established within a reasonable timeframe. Revegetation procedures will be initiated at the beginning of operations. Therefore, a good database will exist for determining needed activities and assessment of the rate of recovery would provide the necessary information as to whether goals were being met and if the bond should be released.

### Comment 03

1. There are also some omissions regarding the length of time needed for natural recovery of the vegetation from disturbance. The document mentions a 30 to 60 year interval (page 5.4-5) and cites USGS 1988 (actually Webb *et al.*, 1988). It fails to mention that Webb *et al.* were referring only to short-lived species (e.g., *Hymenoclea salsola*, *Chrysothamnus viscidiflorus*, and *Stipa speciosa*), which are not the principal dominants on the project site. The dominants, as specified on pages 4.4-2 and 4.4-3 of the EIS/EIR, are long-lived species that would not establish significant cover during the 30 to 60 year period. In fact, the recovery of Blackbrush scrub vegetation dominated by *Coleogyne ramosissima* was found to require centuries, if not thousands of years (Webb *et al.*, 1988 page 23). *Larrea tridentata* and *Ambrosia dumosa* required 100 years or more, depending on a number of soil factors (Webb *et al.* 1988 pages 1-2 and 51-58). Other researchers have come to this same conclusion (see item 3 in my appended letter of 8/10/88), indicating that significant recovery of the vegetation (and, therefore, wildlife resource) will occur only as the result of the artificial revegetation program conducted by the Applicant. We cannot, therefore, expect natural processes to ameliorate the impacts of this project for several generations.



Response 03

1. Natural onsite recovery of vegetation in previously disturbed areas has been successful within 30 to 70 years without the help of an artificial revegetation program. As shown in Section 4.1.4.2 (Revegetation) of this Final EIS/EIR, numerous species have successfully recolonized by natural processes. The onsite revegetation program will be designed to enhance and accelerate this natural recovery.
2. The USGS paper cited in the Draft EIS/EIR was referenced as background information on soil and vegetation processes. It specifically addresses recovery on a number of Mojave Desert abandoned townsites with plant species similar to those that occur in Lanfair Valley, especially plant assemblages dominated by *Coleogyne ramosissima* (blackbush) and *Larrea tridentata* (creosote bush) that cover the majority of the Castle Mountain Project site. Some of the townsites studied for vegetation recovery are also located at elevations (with expected precipitation) similar to the Hart site, with nearly identical abandonment time frames (i.e., Gold Valley: 4,325 elev/abandoned 1907, Greenwater, Furnace, and Kunz: 4420' and 4720' elev/abandoned 1908). The Greenwater, Furnace, and Kunz townsites cited in the USGS paper are located near the ecotone where the *Larrea* assemblage changes to the *Coleogyne* assemblage: the same ecotone is exhibited at the Hart townsite and Castle Mountain Project site as stated in the Draft EIS/EIR (Figure 4.4.1, Plant Communities). As shown in the historic USGS photographs, disturbance at these sites was intensive. Nearly all vegetation was often removed, and soils were compacted through human activities. These same effects from incidental uses occurred at the Hart townsite. Based upon these data, it was inferred that the natural revegetation that has occurred over the Hart townsite during the last 70 years and over the clay quarrying operations during the last 30 years, are appropriate indicators of an expected rate of success common to the sites studied for the USGS report.
3. It is recognized that long-lived species such as *Larrea* and *Coleogyne* may reestablish slowly over a lengthy period of time. This characteristic is not restricted to desert habitats. The Draft EIS/EIR acknowledges that reestablishment of disturbed communities to pre-disturbance vegetation cover and species composition would be a lengthy process. However, the Draft EIS/EIR does not imply that reproduction of plant assemblages identical to those disturbed is immediately expected or required as a result of the revegetation program. The goal of revegetation would be in accordance with SMARA to provide a usable habitat for wildlife.



Comment 04

1. The bond does not require any degree of revegetation success - it only requires attempts at reseeding and transplanting. Feasibility will be determined after the onsite revegetation studies are completed (pages 3.2-54). At the very least, these conditions do not indicate that the Applicant is committed to succeeding with respect to revegetation. If initial mitigation efforts fail or yield only meager results, what commitment does the Applicant have with respect to recovery? Surely, the conclusions in Table 1.1.1 would be invalidated (that is, there would be significant impacts on vegetation and wildlife), but the Applicant could still walk away with the bond money if it went through the motions of reseeding and transplanting. This is not at all reasonable. The bond conditions should commit the Applicant to concrete goals with respect to revegetation.

Response 04

1. See Response No. 01 regarding bonding and revegetation recovery. The bond conditions will require that the Applicant achieve certain revegetation goals to the satisfaction of the BLM and County, before the revegetation portion of the bond will be released.
2. The significance of impacts to vegetation and wildlife are not entirely dependent upon specific revegetation success. Criteria for determining the significance of impacts to these resources were specified in the Draft EIS/EIR (pages 5.4.1 and 5.5-1).

Comment 05

1. The document does not call for baseline measurements of the vegetation (cover, density, spatial pattern, canopy height, species composition). Such parameters, measured in undisturbed regional vegetation, should be used to suggest goals for mitigation.

Response 05

1. It is recognized that evaluation of existing undisturbed revegetation, as well as previously disturbed sites in the vicinity of the proposed project, is critical in establishing feasible goals for revegetation. Therefore, the Draft EIS/EIR (page 3.2-49) explained that the revegetation program would be "based on specific information on existing revegetation and from research and data to be collected onsite."

Comment 06

1. There is too much reliance upon an unspecified "revegetation research program." Although the Applicant is to be commended for proposing and funding such a project, its design, time



framework, and scope of operations should be specified in the EIS/EIR. This is because the entire nature of the revegetation effort depends on what the program determines is feasible and appropriate. Successful mitigation will require, therefore, that the research is adequately funded, thorough and performed by experts.

#### Response 06

1. Comment noted. The Applicant has contracted with the Desert Studies Consortium to initiate this research program. The progress of the revegetation program will be followed and reported on through the MCP (see the Supplement, Appendix E). For more detail on the specifics of the revegetation research program, the reader is referred to the Applicant's reclamation plan (Viceroy, 1990) which is on file and available for public review as indicated in the User's Guide of this Final EIS/EIR.

#### Comment 07

1. Given the uncertainty and difficulty of vegetation restoration in the arid west (see Item 2 of my appended letter), I suggest that: (a) the mining operation be delayed for at least five years and (b) that an onsite research program be started immediately in order to address the major problems of site preparation, salvaging, propagation, transplantation, seeding, weed control and long-term survival of native shrubs. This would provide the necessary information prior to major disturbance and remove the tremendous uncertainties that the EIS/EIR fails to address.

#### Response 07

1. Based upon the revegetation that has already occurred on previously disturbed areas in the vicinity of the project site, establishment of vegetation is expected (see Section 4.1.4.2, Revegetation, of this Final EIS/EIR for photographs of onsite recovery). Employment of known methods to facilitate recovery would accelerate this process. The suggested 5-year delay for revegetation studies is not necessary. The Draft EIS/EIR provides the BLM and County with the necessary data to make an informed decision based on an understanding of the expected environmental consequences of the proposed activities.

#### Comment 08

1. In summary, the Draft EIS/EIR of the Castle Mountain Project does not adequately provide for the mitigation of impacts to 890 acres of arid land vegetation. It does not specify the goals and timetable of the revegetation effort, and in effect, absolves the Viceroy Gold Corporation from its responsibilities under FLPMA and SMARA. The Applicant should be legally and





financially committed to revegetation by: (1) specifying the goals and timetable of revegetation, (2) modifying the conditions of the bond to include meeting revegetation goals, even if mitigation efforts extend beyond the life of the project, and (3) beginning the revegetation research program at least five years prior to the start of the mining operation.

Response 08

1. See Responses No. 01 through 07, above.
2. The Commenter's allegation that the specified revegetation program absolves the Applicant of its responsibilities under applicable regulations is not correct. The revegetation program has been designed to require that the Applicant employ available revegetation procedures in a manner that will produce the best results in the least amount of time at this site. This concept is employed in the revegetation research program. For additional information on the specific details of revegetation goals, timetables, bond language, and procedures beyond the life of the project, the Commenter is referred to the Applicant's reclamation plan (Viceroy, 1990) which is on file and available for public review at locations indicated in the User's Guide of this Final EIS/EIR.

**LETTER 17: HOLME PETERS/VALERIE LEATHERS****Comment 01**

1. This letter informs you of our specific comments regarding the Draft Environmental Impact Statement for the proposed Castle Mountain gold mine in the eastern Mojave Desert. We should state that in view of these criticisms we support only the No Action Alternative to this project, and oppose the development of any mine of this sort.

**Response 01**

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval.

**Comment 02**

1. The project will seriously impact a crucial desert tortoise population through direct destruction of habitat, increased vehicular traffic, and waste production (industrial toxics and increased raven population due to garbage). Proposed mitigations are inadequate or nonexistent. With the mine operating, what will the response be from Viceroy and from BLM when these mitigations fail? The desert tortoise is likely to achieve State and Federal listing in the near future. Is it appropriate to further endanger an already stressed species such as the desert tortoise? These critical concerns are not specifically addressed.

**Response 02**

1. The Draft EIS/EIR (Section 5.5, Wildlife) provided an appropriate analysis for each of the cited impacts to the desert tortoise that is in conformance with the degree of impact that could occur from the proposed project. Based upon consultation with agencies and experts on the desert tortoise, it was concluded that the proposed measures would adequately mitigate the potential project impacts such that the existence of the desert tortoise would not be threatened by this project. Onsite burrow investigations have confirmed prior estimates that few tortoises use this area as habitat. FWS has similarly reached this conclusion in its Biological Opinion (see Appendix G of this Final EIS/EIR). See Section 4.1.6 (Wildlife), of this Final EIS/EIR for an update on the legal status of the tortoise.



Comment 03

1. The project will significantly alter and degrade the landscape with a huge pit and rock heaps. Major restoration is not intended by the Applicant, which begs the question, "Is such a permanent monstrous scar to be tolerated in a National Scenic Area (and proposed national park)?"

Response 03

1. The Applicant has proposed a reclamation plan that is in accordance with Federal (43 CFR 3809) and State (SMARA) requirements. The Draft EIS/EIR evaluated the visual effects of that plan in Section 5.8 (Visual Resources), and suggested additional measures to enhance the project's compatibility with the EMNSA. With application of these measures, the project would be acceptable in the context of the EMNSA.
2. See Section 4.1.7 (Land Use) of this Final EIS/EIR for a discussion of the proposed national park and compatibility of the project with the EMNSA.

Comment 04

1. The economic analysis of the project does not consider the benefits to surrounding communities of a Mojave National Park as an alternative to the Castle Mountain Project. This is a valid point of consideration in view of pending legislation, the substantial long-term economic stimulus that parks have historically provided to neighboring communities, and the significant environmental and aesthetic degradation of the area to be brought about by the mine.

Response 04

1. Approval or denial of the Castle Mountain Project is not controlled by potential future decisions on a national park.
2. The Draft EIS/EIR evaluates the *environmental consequences* of the Castle Mountain Project. A socioeconomic discussion was included to assess the availability of housing and potential impacts of population growth that would occur as a result of project employment. The economic benefits of the proposed project, the proposed national park, and/or other activities or legislation are not relevant to an understanding of the environmental impacts of the Proposed Action. However, economic, social, technological and other information will be considered by the BLM and County prior to rendering a decision on the project and will be part of the final record.



Comment 05

1. The gold mine will potentially have significant impacts on the local aquifer. The large amounts of water needed for this process will lower the water table, very possibly affecting the flow at nearby Piute Spring. This free-flowing spring represents a very rare condition in the desert, and is an irreplaceable water source for a greater diversity of desert wildlife. It is, in short, a matter of life or death for many creatures. Additionally, the use of cyanide and the production of toxic by-products from the leaching process do pose serious threats to the water supply. Yet the EIS very matter-of-factly treats all these problems as "solved," and thus not significant. But what if the simplistic predictions and limited mitigations offered turn out to fall short? These serious concerns are given no discussion.

Response 05

1. A detailed analysis was completed in the Draft EIS/EIR (Sections 4.3 and 5.3, Water Resources), to determine if the proposed ground water withdrawals could affect Piute Spring. Based upon the data reviewed and collected, and the hydrogeologic analysis completed, there is no indication that the project would affect Piute Spring flow.
2. The potential effects of cyanide use were evaluated in Sections 5.3 (Water Resources) and 5.7 (Environmental Health and Safety) of the Draft EIS/EIR. Based upon the required ground water protection measures, and the chemical characteristics of cyanide, no significant threat to ground water is expected.
3. The Draft EIS/EIR evaluated potential impacts and identified mitigation measures to avoid the impact or reduce it to an acceptable level. The conclusion that an impact would not be significant was based upon detailed evaluations and the criteria for significance established for each environmental resource.
4. A ground water monitoring and contingency program would be required, as recommended in the Draft EIS/EIR. This program is described in Section 4.1.5 (Water Resources) of this Final EIS/EIR.

Comment 06

1. Large volumes of cyanide-contaminated water are a direct threat to wildlife. Proposed mitigations to isolate cyanide solution from wildlife are of questionable effectiveness, and substantial alternative methods to protect birds, mammals and reptiles must be considered.



Response 06

1. The Draft EIS/EIR (Section 5.5, Wildlife) proposed a series of detailed measures designed to isolate cyanide processing solutions from wildlife. Each of these measures have proven individually effective at other operations and they are therefore expected to be successfully employed at this site.



## LETTER 18: DAVID M. POLCYN

Comment 01

1. First, I am very concerned about "revegetation" following mining operations at Castle Mountain (and elsewhere). There are many shortcomings in the Draft as it relates to revegetation, not the least of which is the fact that we know *very little* about revegetation of severely disturbed desert habitats, yet in reading the draft one would think that revegetation were not only well understood but an easy task. I read a lot of vague promises in the Draft, but nothing that assures me that anything substantial will be done to insure revegetation. After hearing the same empty promises for years, I think it is time that the BLM (and the people of this State) demand that mining interests put their money where their mouth is, and *really* do something about revegetation. To begin with, a sizable bond should be required to insure compliance prior to breaking ground. Then, an ongoing commitment to study revegetation processes and strategies should be required in the form of funding *independent* research on the topic (rather than hiring an "in house expert" to study the problem). If every mining operation operating in the County's desert contributed to such a fund, financing research at southern California's colleges and universities, we may actually be able to find solutions which will make the prospect of mining California's desert a lot easier for everyone involved - the mining industry will be able to satisfy critics by showing exactly how they will go about returning the habitat to its natural state, the County and BLM may be more able to put a price tag on expected reclamation projects, and the environmentalists will have a tool by which they can help reclaim the many mining scars currently marking our deserts. However, without basic requirements, I foresee nothing but very slow progress, increased environmental damage and a lot of lip service with little or no action. We are dealing with a *very* sensitive, fragile ecosystem about which *little* is known.

Response 01

1. The Draft EIS/EIR discussion on revegetation (Section 5.4, Vegetation) recognized that revegetation to ". . . predisturbance vegetation cover and species composition would be a lengthy process . . ." However, it was also recognized that previously disturbed onsite and offsite areas have demonstrated successful revegetation without the assistance of a reclamation program. Nevertheless, the Draft EIS/EIR (Section 3.2.8.2, Reclamation Plan) did recommend that onsite revegetation research be completed to determine the most suitable procedures to be used at this site. The Applicant has contracted the California State University Desert Studies Consortium for the baseline research.





2. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR for an additional discussion of natural onsite revegetation.
3. See Section 4.1.3 (Administration Considerations) of this Final EIS/EIR, for a discussion of bonding.

#### Comment 02

1. My second concern has to do with the fact that this project is being considered in a desert tortoise habitat, yet little attention was paid to the effect on the population (and the species, for that matter). As is true for most portions of the draft dealing with the biota, most of the statements were qualitative (not quantitative) and vague at best. For example, the impact of the project on desert tortoise populations was found to be "not significant" because "their density is expected to be very low." First, what does "very low" mean? Compared to what? Excuse me, but *very low density* is one of *the* criteria for placing species on threatened/endangered lists in the first place, yet now this same criteria is being used to argue for allowing them to be killed? Where are the numbers, where is the logic? Secondly, nowhere did I see an account made of the *total* impact of the project on the desert tortoise population - road kills, PLUS deaths of onsite resident tortoises, PLUS loss of habitat for those living offsite but utilizing the site for foraging territory, PLUS those killed by ravens, PLUS any other contributing factors. All told, the sum of all these factors could be a devastating blow to the local population, and I stress "could" because without thorough research we can't even begin to guess - and when we are dealing with sensitive species like this we shouldn't be guessing. Focusing on each contributing factor independently, as this report did, minimizes the true impact of the total project, and it is this *total impact* which will be felt by the tortoise populations. The mining company goes to great lengths to quantify the mining end of the operation to assure the County that money will flow from the project (and to assure themselves that the project is economically feasible), yet falls short of providing convincing arguments that the biological half of the equation will fare as well. Let's see some numbers and assurances, not vague statements and lip service.

#### Response 02

1. The Draft EIS/EIR characterization of low density tortoise habitat should not be confused with the FWS criteria for listing the tortoise in accordance with the Endangered Species Act. Population densities of the desert tortoise are primarily related to the quality of the habitat. Where elevation, precipitation, and vegetation are appropriate to suit the species, habitat quality is high (such as in Fenner and Ivanpah Valleys) and tortoise densities are high. Where

elevation, precipitation, and vegetation do not suit the species, tortoise densities are low or nonexistent. The project site is located in such an area, where elevation is higher than the typical habitat requirement. The Draft EIS/EIR is therefore accurate in its characterization of tortoise habitat as very low population density (Section 4.5, Wildlife). The BLM definition for "very low" density is less than 20 tortoises per square mile, as compared to "low," "medium," and "high" densities. (High densities exceed 100 tortoises per square mile.) These relative densities were shown in the Draft EIS/EIR (Figure 4.5.1, Desert Tortoise Habitat and Proposed Access Roads).

2. The State and Federal listings of the tortoises as *threatened* are primarily related to a rate of *decline* in some sub-populations. This is conceptually different and unrelated to the site-specific densities discussed in the Draft EIS/EIR. The Draft EIS/EIR conclusion that the project would not significantly affect the tortoise was based upon the assessment of potential impacts in Section 5.5 (Wildlife) and the mitigation measures that were recommended to avoid or reduce those impacts to an acceptable level.
3. The Draft EIS/EIR documented each of the potential effects to the tortoise, including potential direct effects (such as road traffic kills) and indirect effects (such as habitat disturbance). Relocation of the Searchlight access road to avoid high density tortoise habitat, as described in the Supplement to the Draft EIS/EIR, and mitigation measures were adopted to reduce or eliminate the effects of road traffic. Site disturbance of the marginal habitat would not be significant in light of the very low use by tortoises. Accordingly, the total (or cumulative) impact on the species was determined not to be significant. It is recognized that while this was a mostly qualitative determination, such methods of impact assessment are appropriate. Speculation on the number of tortoises that could potentially be affected is not required by NEPA or CEQA, and would not change the Draft EIS/EIR conclusion. However, in its Biological Opinion, the FWS does limit the number of tortoises that the project can "take" (see Appendix G) of this Final EIS/EIR.

#### Comment 03

1. Lastly, I would beg that the the project be given a NO ACTION ALTERNATIVE vote until the biological effects *in total* are sufficiently researched and the proposed mitigating factors *thoroughly spelled out* and backed with bonding (when appropriate). Vague statements like "shall be monitored", "several measures", "revegetation efforts", "shall be minimized", "revegetation research program", "if invasion of exotic species becomes a problem", and





similar non-statements (of which there are dozens) should be clearly spelled out, since they are so open to interpretation that many of them actually mean nothing at all if one wishes to interpret them in particular ways.

#### Response 03

1. Each of the technical analyses completed for the Draft EIS/EIR presented sufficient information to determine if the reasonably foreseeable project effects would be significant, based upon specific criteria for significance established for each environmental issue. The evaluations therefore satisfy the intent of an EIS/EIR in accordance with NEPA and CEQA, and are sufficient to allow the decision makers to make an intelligent decision on the project, relative to the envisioned environmental consequences. Mitigation measures are specifically identified for each effect, and summarized in the Draft EIS/EIR (Table 1.1.1, Summary of Potential Effects and Mitigation Measures). Appropriate bonding will be required, as discussed in the Draft EIS/EIR (Section 3.2.8.3, Bonding) and in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.
2. The statements extracted out of the Draft EIS/EIR by the Commenter are not meaningful as they have been taken out of context. It is therefore not clear for which specific issue the Commenter is requesting additional clarification.
3. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of opinions on project approval/denial.

#### Comment 04

1. I also feel that the report (or those conducting the study) should spell out what criteria they use to judge SIGNIFICANCE. For instance, in the portion of the report dealing with water resources, many conflicting statements are presented. While stating "Studies indicate minimal or no effect would occur on the ground water basin or existing wells," it is also mentioned that "if the amount of drawdown at monitoring wells exceeds the estimated 60 feet, the well field modeling shall be reevaluated to assure that predictions of no noticeable effect at Piute Spring remain valid", and "if local wells go dry as a result of the project . . ." So, which is it? The water table will not be affected, or it might be affected? And, if it is affected (i.e., if Piute Spring is affected), then what? What constitutes an insignificant impact on the ground water from a hydrological standpoint, could well translate into a disastrous impact on the plant life



so delicately yet incontrovertibly tuned to its level and flow over the millennia. Once Piute Spring is noticeably affected, I assure you that the ability to rectify the problem is well beyond *anything* mentioned in the Draft, if it is possible at all, so let's see some real proposals, with numbers and plans of action (including the immediate cessation of mining activity upon the identification of certain effects that Viceroy promises "won't happen").

#### Response 04

1. The criteria used to judge significance of an effect were listed at the beginning of each impact evaluation section in the Draft EIS/EIR (Chapter 5.0, Potential Environmental Impacts).
2. While the hydrologic evaluations completed for the Draft EIS/EIR (Sections 4.3 and 5.3, Water Resources) determined that the proposed ground water withdrawals would not be expected to effect Piute Spring or other existing water sources, it was recognized that actual conditions may not occur exactly as predicted. The Draft EIS/EIR therefore recommended that monitoring be accomplished and a reevaluation be undertaken if the results demonstrate that the predicted drawdown is substantially exceeded (see page 6.3-2). Since the purpose of such monitoring would be to detect an inconsistency in aquifer effect before Piute Spring could be affected, the Commenter's concerns should be satisfied. Additional discussion of the details of this mitigation measure and the contingency plans to protect Piute Spring can be found in Section 4.1.5 (Water Resources) of this Final EIS/EIR.

#### Comment 05

1. If you want another eyesore in the desert for at least the next sixty years, and possibly hundreds of years, go ahead and accept the Draft as written. If you are truly dedicated to insuring a beautiful and quality landscape, with intact habitats, for all current and future citizens, I think you need to require Viceroy to go back, do their homework to provide some real numbers and plans of action, and to put their money where their mouth is to assure the people of California that public lands are being used in a rational and reasonable manner, with all possible safeguards in place, and that any damage which does arise from this project will be quickly and effectively remedied. After all that *does* seem to be the role assumed by real MANAGERS (as in BLM, for instance), isn't it?

Response 05

1. Responses to the Commenter's general opinions on the adequacy of the Draft EIS/EIR have been as specific as possible, given the broad nature of the comments and the lack of specific data or references to support the comments. While no new specific alternatives or better ways to mitigate the significant effects were raised by the Commenter, in the interest of informing the public, the responses have been prepared in an attempt to guide the Commenter to the respective portions of the Draft EIS/EIR where each concern has been addressed, and to explain the purposes of an EIS/EIR document as provided in NEPA and CEQA.

## LETTER 19: ARCHIE M. RIESER, SR.

Comment 01

1. 6.4.1.2 paragraph one, subparagraph five wherein reference is made to transplanting Joshua trees under four feet in height. Unfortunately, this size range has a much lower survival percentage than those over four feet in height and under 12 feet in height, particularly when moved with a tree spade.

Response 01

1. Comment noted. The mitigation measure for transplantation of Joshua trees has been revised as indicated in Section 3.2 (Mitigation Measures Incorporated Into the Project) of this Final EIS/EIR. Onsite experience and input from those with background in transplanting vegetation will contribute to the success of the revegetation program.

Comment 02

1. 6.4.1.1 paragraph one, wherein stated that no plants within the proposed area fall under the protection of the California Native Plant Protection Act.
2. Referring to page 987 of California Food and Agricultural Code-Chapter 3, Regulated Native Plants Section 80072, subsection (C), *Ferocactus acanthodes* (barrel cactus) is listed in the category of "may not be harvested except for scientific for educational purposes under a permit issued by the commissioner of the county in which the native plants are growing."
3. However, in all fairness to Viceroy Gold; they stimulate (*sic*) at 6.4.1.2 paragraph one introduction that the revegetation program will be based on information from experts qualified in desert flora. Such personnel would have the time and expertise to correct minor flaws of the aforementioned nature.

Response 02

1. The Draft EIS/EIR (page 6.4-1) stated that "No listed plants or plants officially proposed to be listed occur on the project site" was in reference to *threatened* or *endangered* species. It is recognized that appropriate permits must be obtained for harvesting of some species, such as the barrel cactus and Joshua tree. The Applicant will be required to obtain the appropriate permits prior to vegetation removal.





## LETTER 20: WILLIAM W. SAVAGE

Comment 01

## 1. [Section] 3.2.7, Operational Considerations:

- a) The number and the types of mining claims are not indicated.
- b) These claims should be listed and plotted on a map as to their relationship to the project.
- c) The location of the patented area should be shown on a map.
- d) The owner or owners of the claims should be listed.
- e) The number of millsite claims should not exceed the number of mining claims and each one should show to which mining claim it is directly associated.

Response 01

1. Specific mining claim numbers and types in the east Mojave held by the Applicant and other claimants are on file and available for public review at both the BLM California State Office in Sacramento and the County. That information was not included in the Draft EIS/EIR as it is not believed pertinent to an understanding of the proposed project or its environmental effects. The mineral claims affected by the proposed project are located within the project area depicted in Figure 3.2.3 Proposed Project Site. Patented claims covering 115 acres were also shown on this map. The comment regarding millsite claims indicates a misunderstanding of Federal mining law; a mining claim can have more than one millsite associated with it, as long as they are used or occupied with an intent to use them for mining purposes. Legal issues surrounding mining claims are not within the scope or intent of an EIS or EIR.

Comment 02

1. Table 3.2.1, page 3.2-9 - The area that is to be mined contains two pits, one of 30 acres to 40 acres and one of 90 to 110 acres. The total ore area would be 150 acres or approximately eight mining claims. One additional five-acre millsite claim for each mining claim would add a total of 40 acres, making a total of less than 200 acres permissible by mining law to be acquired for this size of operation.

Response 02

1. See Response No. 01 regarding millsites. The mining claim boundaries are not in direct correlation with the mine pits.

Comment 03

1. The project, as set forth, requires a total of 2,735 acres or over four square miles of Federal land. How would this additional land be acquired and used? Should this amount of public land use be permitted for such a small mineralized area?

Response 03

1. The project site configuration was established based on the boundaries of claims held by the Applicant with an appropriate area for the activities proposed. No additional activities beyond those described in the Draft EIS/EIR are envisioned within the project site.
2. The extent of the mineralized area is not a primary factor in determining the project configuration. The project acreage is appropriately sized to provide an adequate working area and protect public safety during project operations. Facilities layout and topographic constraints also contributed to the final configuration. Only about 890 acres of the site would actually be disturbed.
3. Millsite claims can be used to cover additional working areas related to the claims, such as the overburden pile, ore piles, equipment, etc.

Comment 04

1. The waste dumps alone exceed the mining area by 100 percent.

Response 04

1. Observation noted. The configuration of the overburden is primarily related to a safe working gradient and to a low profile for visual impacts. This is permitted under Federal mining law.

Comment 05

1. [Page] 3.2-12 - Although protore and low grade uneconomical ore are mentioned, these areas should not be included in the right to mine or acquire additional land.

Response 05

1. The definitions of protore and low grade ore are relative terms that are based on the current gold price, and the current cost of extraction, which in turn, depends on current technology. With an increase in price, protore becomes ore. Protore and low grade ore are integrally

associated with the ore body to be mined, but can be segregated during the mining process. Stockpiling of these materials would not involve additional land acquisition, as they would be placed on a part of the overburden pile adjacent to the primary crusher.

#### Comment 06

1. [Page] 3.3-1, Proposed Open Pit Procedure - The great depth of the overburden in certain areas (250 feet) requires a great deal of overburden to be removed. Do the surface boundaries of the pits go beyond the viable mining claim boundaries? How would this land be acquired?

#### Response 06

1. The boundaries of the mine pits are within the claims area. No additional land would be acquired for development of these pits.

#### Comment 07

1. [Page] 3.3-2, Underground Mining - The possibility of underground mining should be given further consideration to minimize ground removal. There are underground mines that mine disseminated deposits. Two separate reports on possible underground mining should be submitted by two separate consultant firms.

#### Response 07

1. Underground mining is not part of the Proposed Action which is to develop two open pits in the course of mining three disseminated ore deposits. As discussed in the Draft EIS/EIR (Section 3.3.1, Alternative Mining and Processing Technologies), underground mining "is not applicable to disseminated low-grade ore bodies such as those at the Castle Mountain Project site" (page 3.3-2). The near-surface location of these orebodies (in the context of underground mining) would require that much of the ore deposits be left in place to support the ground surface over these deposits, if underground mining methods were to be used.
2. According to the Applicant, given the present costs for labor and materials, underground mining methods would require ore grades in excess of 0.25 ounces of gold per ton of ore. The average of the Castle Mountain deposits is less than 0.05 ounces of gold per ton of ore.

#### Comment 08

1. [Page] 11.1-1, Qualifications of Preparers - Although several preparers have considerable experience in mining, there is not one who has a B.S. or Ph.D. in Mining Engineering.



Response 08

1. The qualifications of the Draft EIS/EIR preparers are suited to the task of preparing an evaluation of the environmental impacts associated with mining project development. Project development information provided by the Applicant was prepared with the assistance of mining engineers.

Comment 09

1. [Section] 3.3.1.2, Complete Pit Backfilling - One must disagree with the statement that backfilling is not suitable from operational and economic standpoints for the following reasons:
  - Although the overburden pile volume is 30 percent greater than that mined, 30 million tons of ore has also been removed to a leach pile. The overburden pile will fill the pit just right and one would have only the leach pile remaining.
  - If the complete backfilling renders the pit mining operation uneconomical, then mining is not practicable and mining should not be permitted.
  - Present drilling of the mineralized area and beyond would be sufficient to determine the availability of any future ore.
  - Open pit mining could again begin by making a drop-cut and starting another cut.
  - If the replacement of the overburden is so costly from the use of energy, water, time etc., then it is not an economical orebody and must not be mined.

Response 09

1. See Section 3.3.1.2 (Castle Mountain Project Backfilling Constraints and Opportunities) of this Final EIS/EIR for a discussion of the potential environmental economic and mineral resource effects of backfilling.

Comment 10

1. [Page] 3.2-53, Bonding - A bond for both leaching and reclamation should be in place even before a mining permit is considered.

Response 10

1. Bonds to protect water quality and for reclamation of disturbed land would be required before mining activities are permitted. See Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR for a discussion of bonding.



Comment 11

1. [Page] 3.2-52, Phase IV Final Reclamation - Cessation of operations should be defined. Would the operation be considered ongoing if only one truck of rock a month over even a year were removed from the pit? I would suggest that when production of gold ore drops to a point of no profit for a six month period, then the operation has ceased and reclamation must begin.

Response 11

1. The Draft EIS/EIR was prepared to address the potential effects to the environment that would be associated with full development of the project over a period of about 10 years. It is not believed that short-term intermittent shut-down during the life of the project would result in additional significant effects to the environment. Therefore, restrictions on the duration of a temporary shutdown are unwarranted.

Comment 12

1. A portion of the Eagle Mountain Iron Ore Mine in Riverside County, California was mined under the mining reclamation law. This mine has ceased operation for many years and the reclamation has been almost nil, if not completely nil. I suggest that members of the Bureau of Land Management, San Bernardino County officials and California State Department of Geology visit that abandoned mine and see why the reclamation there has not gone forward and what must be corrected in any future agreement to insure reclamation of any new mining operation.

Response 12

1. The Eagle Mountain mine in Riverside County was developed prior to the passage of modern reclamation law (FLPMA and SMARA) and modern reclamation practices.

## LETTER 21: HOWARD SUSKIND

Comment 01

1. I recently attended a hearing in San Bernardino concerning the Castle Mountain Project that is currently subject to approval by the Bureau of Land Management. Rather than jumping to the emotional conclusions of many of the speakers during the hearing, I decided to visit the East Mojave National Scenic Area in order to obtain first hand knowledge of the proposal. I was quite surprised to see heavy equipment, and a great deal of work already underway on a project that has not yet been approved. This work was far beyond anything that could be defined as exploratory, and because the location of the project is somewhat remote, I wanted to bring this to your attention as a concerned citizen. I realize that because of the size of the east Mojave, the BLM cannot patrol all of the areas all the time, and must rely on citizens like myself to report on possible violations.
2. Please let me know what you find. Secondly, if the current activity at the project site is within the bounds of the law, would you briefly explain why. Thirdly, who will be responsible for the cleanup if the project is not approved. I look forward to hearing from you in the near future, and want to thank you for your time. I hope that I am assisting the BLM in its management of the east Mojave.

Response 01

1. The referenced exploratory activities at the Castle Mountain site have been permitted by BLM in accordance with 43 CFR 3809 regulations. The BLM is aware of these activities and has monitored the exploratory drilling program since the Applicant filed a Plan of Operations in 1983. The activities observed by the Commenter may have been associated with a secondary phase of exploration known as definition drilling. This involves a series of drill holes designed to determine the size of a discovered orebody. This activity was also permitted by the BLM. It is also possible the Commenter may have observed quarrying activities in the North Clay pit, which is on private lands and has no connection with the Castle Mountain Project.
2. If the Proposed Action is not approved, the Applicant will be responsible for reclamation of surface disturbance associated with the exploration program. A bond had previously been posted to assure completion of this reclamation to the satisfaction of BLM.





## LETTER 22: JOANNE VINTON

Comment 01

1. What would be the effect of building the gas pipeline along Searchlight [Access Route]? Shouldn't we look at that before we do anything else?

Response 01

1. The natural gas pipeline is identified in the Draft EIS/EIR description of the Proposed Action. As discussed in Section 3.2.5.2 (Power Requirements and Supply), and shown in Figure 3.2.9 (Preliminary Utilities Plan), the pipeline would be constructed along the shoulder of the proposed Searchlight Access Route. The pipeline would be located in this alignment to limit additional surface disturbance. A detailed description of the access route location, alignment and length was provided in the Draft EIS/EIR (Table 3.2.4, Proposed Access Improvements). Expected impacts that would occur from construction and improvements to the route were addressed under each applicable environmental discussion in the Draft EIS/EIR (Chapter 5.0, Potential Environmental Impacts).

Comment 02

1. A "leakage detection system" is mentioned. What is it? How will it work?

Response 02

1. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of monitoring requirements and the leak detection system.

Comment 03

1. Some of the overburden will be used to build storm drainage berms. Is this in case the leach ponds overflow? Will the storm drains also be lined? How will the overflow be disposed of?

Response 03

1. Stormwater drainage berms are not associated with solution storage facilities. These and the processing and leaching facilities are on elevated portions of the project site, out of the flood plains that could result if a major storm passes through the area. Depending on the final design and configuration of one of the later leach pads, it may be necessary to divert storm flows around that area using a drainage ditch and berm.

2. Solution storage basins will be adequately sized to accept storm run-off from the leach pads as a result of precipitation. This flow would be conveyed to the solution storage basins in lined ditches. The stored run-off would be retained for use as make-up water for leaching solution, reducing the amount of ground water required.

#### Comment 04

1. The pits will not be backfilled. Exactly how will people and wildlife be protected from those pits? Will fences be left there forever?

#### Response 04

1. The primary concern with regard to the mine pits and public safety following project operations would be unintentional entry. This would be avoided through the use of permanent berms at potential pit access points. Roads within the pits would be reclaimed, but left for wildlife habitat and ingress/egress. In general, fencing will be removed in compliance with the reclamation requirements after the areas enclosed by the fencing has been revegetated and the plants have matured to the point that they can withstand the impact of grazing.

#### Comment 05

1. The Applicant may request approval to dispose of tires, metal, concrete, and wood in the overburden pile. I would like this issue to be settled now, not later. This does not sound like a good idea.

#### Response 05

1. The Applicant has not requested approval of onsite disposal of these types of items as part of the Proposed Action. However, the Draft EIS/EIR includes this activity as a potential future event. Should such waste disposal be requested, the Applicant would be required to obtain permits from the appropriate agencies.

#### Comment 06

1. What are the details of the spill prevention and preparedness plan? I would like to know this plan before any project approvals.

#### Response 06

1. A plan for spill prevention and countermeasures is required by the County in accordance with State requirements for any permitted activity using oil and hazardous substances. The purpose of the plan is to identify potential sources of oil and chemical spills, establish measures for

spill prevention and control, and to identify cleanup and reporting procedures should a spill occur. These plans are prepared pursuant to Section 311 of the Federal Water Pollution Control Act (33 U.S.C. §1321). The details of this plan are not required to be on file prior to project approval, but would be required prior to initiation of activities involving use of such substances.

#### Comment 07

1. Desert tortoise habitat will be disturbed whether or not the Searchlight Road is improved because of the gas pipeline. Has anyone tried use of culverts for allowing tortoises to travel under roads? Does that really work?

#### Response 07

1. It is known that tortoises will use culverts. However, the actual need for these facilities has not been scientifically established.
2. If the natural gas pipeline were installed, no new disturbance would occur to desert tortoise habitat because the line would be laid in the shoulder of an existing road.

#### Comment 08

1. There are conflicting reports on whether or not the water withdrawals will effect Piute Spring. This needs to be resolved. Who do we believe?

#### Response 08

1. The Draft EIS/EIR analysis to determine the potential for project ground water withdrawals to affect Piute Spring were independently prepared by experts responsible to the BLM and County. The methodology used and results of the study were published in a report entitled *Castle Mountain Project, Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring* (Environmental Solutions, Inc., 1989). The report was summarized in the Draft EIS/EIR for review by agencies, organizations, and the general public.
2. While other opinions on the potential effects of Piute Spring have been offered by individuals, the statements have typically been opinions unsupported by substantive alternative methodology, conflicting data, or analysis that would change the conclusions of the study prepared for Draft EIS/EIR.



3. The final decision as to which conclusions are determined acceptable is the prerogative of the BLM and County.

#### Comment 09

1. The project will disturb desert tortoise and bighorn sheep habitat. This is not acceptable.

#### Response 09

1. Determination of acceptable disturbance to wildlife habitat used by the desert tortoise, bighorn sheep, or other animals is evaluated in the Draft EIS/EIR. Based upon criteria stated in the Draft EIS/EIR (page 5.5-1), it was determined that potential project impacts could be mitigated to an acceptable level. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a further discussion of bighorn sheep and the desert tortoise.

#### Comment 10

1. The reclamation plan is not detailed enough, and what is there is based on speculation. The Applicant does not know yet (none of us know yet) how well transplanting vegetation will work.

#### Response 10

1. The level of detail on project reclamation as summarized in the Draft EIS/EIR from the Applicant's original reclamation plan was adequate for the evaluation of potential environmental impacts and is of sufficient detail to allow the BLM and County to make an informed decision on the project, relative to the envisioned consequences. That reclamation plan has been revised to incorporate the suggestions of the Draft EIS/EIR and public input, as discussed in Section 1.5 (Final Reclamation Plan) of this Final EIS/EIR.
2. The practice of transplanting plants is not considered speculative since it is commonly employed for certain desert species. It is, however, recognized that some species are not amenable to transplantation. It is expected that for these species, seeding and/or planting of nursery seedlings may be appropriate. The Draft EIS/EIR therefore recommended that a site-specific revegetation program be developed (see Section 3.2.8, Reclamation).

#### Comment 11

1. Will migrating birds get caught in these nets over the leach ponds? This is not acceptable.

Response 11

1. Comment noted. The Draft EIS/EIR recommends that a small net mesh size of 1-inch or less be used to avoid this problem.

Comment 12

1. I assume that BLM will monitor the Applicant's compliance with the mitigation and safety plans. This is a cost to taxpayers. What will taxpayers get in return? Apparently not royalties or leasing fees. Why should taxpayers pay for this? Isn't the company a Canadian firm?

Response 12

1. The costs of compliance monitoring would be borne by the Applicant. The agencies also have authority to levy charges, fees, or assessments to recover the costs they incur in verifying the accuracy and completeness of the required reports.
2. See Section 4.1.8 (Socioeconomics) of this Final EIS/EIR for a discussion of royalties.

Comment 13

1. In general, the DEIS/EIR requires that we put too much faith in the Applicant to do things right. The oil spill at Prince William Sound shows us that this is not a good way to operate. The Applicant seems to want to take shortcuts in order to make the mine economically feasible. Why should taxpayers allow this? Why should they get rich at public expense? The unavoidable adverse impacts are not acceptable to me. The "no project" alternative is the only solution to this.

Response 13

1. The Draft EIS/EIR evaluates potential impacts and recommends mitigation measures for each identified impact. Mitigation compliance monitoring would be completed to ensure that the project is operated and reclaimed to the satisfaction of the agencies. These measures have been designed to eliminate shortcuts that would be at the expense of the environment and to ensure the Applicant adheres to approved procedures.
2. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR for a discussion of opinions on project approval/denial.

## LETTER 23: RICHARD V. WYMAN

Comment 01

1. The Draft Environmental Impact Statement has been thoroughly prepared and has considered the wildlife protection, especially with regard to cyanide use. The desert tortoise is in no danger of becoming extinct from this operation, and if the Nevada access road is approved, this passes through an area of relatively low tortoise population. The measures described in Section 3.2.7.4 are very adequate for wildlife protection. These measures have proven effective at the large gold mines in Nevada. Certainly the wild statements made at the public hearings cannot be supported in any way.

Response 01

1. Comments noted.

Comment 02

1. The problem of reclamation and revegetation has been thoroughly planned (3.2.8.2) and will return the area to a very acceptable level after mining.

Response 02

1. Comment noted.

Comment 03

1. The problem of water supply was studied at length (5.3.1.2). The measures to mitigate any damage should be completely acceptable to all. The recirculation and reuse of water will mean a minimum impact on the ground water reservoir. After mining the reservoir will be recharged naturally.

Response 03

1. Comment noted.





Comment 04

1. There are a vast number of laws of an environmental nature now controlling all phases of economic activity, especially mining. The groups which have appeared at hearings to oppose the Viceroy operation were instrumental in getting those laws passed. Now they should support the application of these laws by the BLM and other agencies of the State and Federal government.

Response 04

1. Comment noted.



#### 4.4.2 SUPPLEMENT RESPONSES

Letter 1: Heather Hahn

Letter 2: Elaine and Doug Kent

Letter 3: George and Rhonda Ostertag

Letter 4: Joanne Vinton







## LETTER 1: HEATHER HAHN

Comment 01

1. I'm cynical. I can't believe there's a clever mitigation measure to counteract almost every conceivable threat to the environment. A project of this magnitude that will last ten years and move ten million tons of soil a year will inevitably have an immense impact on the environment. How can you use 450 gallons of water a minute and not affect the water supply in one of the most arid regions on earth? Consuming this much water will threaten Piute Creek and the surrounding riparian habitat. And what about air quality? Four hundred twenty-seven pounds of particles generated daily plus combustion emissions would result in considerable degradation to the already deteriorated desert air. How can you restore 930 acres of destroyed vegetation and wildlife habitats?

Response 01

1. CEQA requires that mitigation measures be developed for each identified significant effect. The Draft EIS/EIR has been prepared in accordance with this and other environmental requirements to avoid significant impacts or mitigate them to an acceptable level. Each of the issues raised by the Commenter has been evaluated in the Draft EIS/EIR for potential effects and mitigation measures.
2. The environmental documentation does not indicate that the reclamation plan will *restore* the project site. The existing topography of the site will be altered, and it is recognized in the Draft EIS/EIR that complete revegetation will require an extended period. The intent of mined land reclamation is briefly explained in Section 4.1.4.2 (Revegetation) of this Final EIS/EIR.

Comment 02

1. Other mines using the heap leach cyanide technology have left behind considerable damage - waste piles, unclaimed pits, and dead wildlife. I can't believe Viceroy would be an exception. Late last year on the NBC evening news I saw a segment on the new gold rush that is going on now in places like Bodie, California and Elko, Nevada, where the heap leach cyanide mining process was used. It was depressing to see such large-scale devastation of the earth, something you can't grasp by reading through the Draft EIS. The mining companies were going to make a profit, leave a mess, and move on. When interviewed one mining company spokesman said they couldn't put back all they had removed; it would cost as much to put it

back as it did to take it out in the first place. Local residents who were interviewed were furious about the damage they would be left with forever. This is the reality of this new mining process, not what is neatly presented in the charts of the Supplement to the Draft EIS.

Response 02

1. See Response No. 01.
2. See Section 4.1.4.1 (Mine Pit Backfilling) of this Final EIS/EIR.

Comment 03

1. Mining companies don't have a very good record for reclaiming the land they scar, and according to GAO Report GAO-RCED-88-21, you haven't had very good luck getting even small operations to comply with clean-up regulation. But even if Viceroy did try to carry out all their proposed reclamation measures, how possible is it to restore the desert after so much of it has been disemboweled and crushed up? There's no way to replace the water consumed, which is really more valuable than the gold. Anyone who lives out here knows that once the desert's crust is broken, you are left with a dustbowl. It takes desert plants decades to restore the thin layer of desert topsoil. The desert's food chain draws its nourishment from this essential topsoil. Lanfair Valley contains unique grasslands, and once native grassland is destroyed, it's often difficult or impossible to re-establish it. If the tortoise population in this area is considered "low density" now, this project will certainly cause it to be a lot lower. Other species will be at risk also, especially in the Piute Creek Area of Environmental Concern. In short, Viceroy does not have the power to magically re-create what took billions of years to evolve to its present states.

Response 03

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR for a discussion of natural revegetation recovery in Lanfair Valley.
2. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of ground water withdrawal and Piute Spring flow.
3. Assurance that the Applicant will complete the required reclamation to the satisfaction of the agencies will be guaranteed through bonding. Bonding is further discussed in Section 4.1.3 (Administrative Considerations) of this Final EIS/EIR.

Comment 04

1. I can't see how whatever gold is found can justify the destruction its extraction will cause, especially when so much of the gold produced winds up made into useless trinkets. Obtaining gold this way makes about as much sense as killing an elephant for its tusks or a rhino for its horn. The unspoiled desert is a far greater resource than whatever gold can be extracted through heap leach cyanide mining.
2. If this project is permitted in the EMNSA, what about the next one, and the next one? We don't want to see more and more of these strip mines move into the east Mojave, and especially not into proposed parklands.
3. People are becoming environmentally more aware. Many people are concerned about the continued destruction of the California desert and are closely watching what happens out here. You have been accused of caving in to mining company interests in the past; now it's time to rectify some of these past imbalances. According to the supplement to the draft EIS, you can deny a project if it will result in "unnecessary and undue degradation to the environment." I think the Castle Mountain mining project meets this criteria. I urge you to put the welfare of the desert ahead of Viceroy's wants and adopt the no action alternative.

Response 04

1. See Section 4.1.2 (Project Approval/Denial Considerations) of this Final EIS/EIR regarding opinions on project approval/denial, future mining proposals, and for an explanation of unnecessary or undue degradation.
2. See Section 4.1.7 (Land Use) of this Final EIS/EIR regarding project compatibility with the EMNSA and for a discussion on the proposed national park.



LETTER 2: ELAINE AND DOUG KENT

Comment 01

1. The "mitigation measure" of acquiring lands for a tortoise preserve does not alleviate the problem of the destruction of tortoise habitat which will accompany the mining.

Response 01

1. As the Proposed Action is not located in Category 1 habitat, its surface disturbances are not expected to significantly affect the tortoise. Acquisition of private land for tortoise habitat is one of many measures designed to benefit the tortoise. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for additional discussion on the final FWS determination of habitat compensation.

Comment 02

1. Moreover the cyanide ponds are a real danger to the national scenic area and are not appropriate inside a scenic area. At least the cyanide ponds should be outside the boundaries of the scenic area.

Response 02

1. See Section 3.1 (Final Project Design) of this Final EIS/EIR for the final design of solution storage facilities. The same stringent standards for construction and operation of these facilities will be applicable whether they are inside or outside the EMNSA.

## LETTER 3: GEORGE AND RHONDA OSTERTAG

Comment 01

1. In several places (page 1-3, for example), the SEIS states compensation would be paid if the site is withdrawn from consideration for mineral production. The inference is that if this project is not approved, compensation would have to be paid to the claimant. Notwithstanding the Mining Law of 1872, the claimant still has to show that its project meets applicable environmental laws and regulations. The Castle Mountain project can be denied without withdrawing the land from mineral consideration. The project creates significant ecological damage that the mitigation measures, in our opinion, do not satisfactorily address. National policy does encourage domestic mining activity but not at the expense of the environment.

Response 01

1. Comment noted. The purpose of this environmental impact documentation is to evaluate the potential project effects in compliance with applicable environmental laws and regulations.

Comment 02

1. I disagree with placing the burden of monitoring and reporting compliance with environmental standards on the Applicant. They should have the financial burden but not control. Why would they be expected to be truthful (or at least not misleading)? It is not in their best interest. Monitoring results can be changed by which labs do the analysis, when samples are taken, etc. . . . This should not be under the control of the Applicant.

Response 02

1. It is in the Applicant's best interest to comply with required conditions set forth by Federal, State, and local agencies, since violations could jeopardize the mining operation. As stated in the Supplement (page E-15):
  - "Federal law makes it a crime punishable by a fine of not more than \$10,000 or imprisonment for not more than five years to knowingly and willingly falsify, conceal, or cover up any material fact or make false statements on any matter within BLM's jurisdiction (Part 18, United States Code [U.S.C.] § 1001). This provision would be applicable to the Project Owner/Operator and the MCC [Mitigation Compliance Coordinator], as its willful abuse would be punishable by law. The existence of this Federal sanction provides assurance as to the reliability of the proposed environmental reporting process."

2. In addition, the BLM and County have the right to conduct onsite compliance reviews at any time. It is BLM's policy to conduct onsite inspections of mining operations using cyanide not less frequently than quarterly.

#### Comment 03

1. On more specific issues in the SEIS, page 1-2 states the storage of process solutions is being "reevaluated" to consider the option of steel storage tanks instead of storage ponds. The project should not be approved until the applicant has said it will use the storage tank option. Ponds have caused wildlife damage elsewhere and should not be considered here based on potential wildlife damage. If ponds are used and wildlife is killed, the ponds should be drained and the project shut down until tanks are installed. The permit should specifically address this issue.

#### Response 03

1. Use of solution storage tanks has been adopted as the preferred design concept, as discussed in Section 3.1 (Final Project Design) of this Final EIS/EIR.

#### Comment 04

1. Habitat compensation should be based on potential tortoise populations in the effected area, not current ones. Current levels have been reduced due to a number of problems and compensation should be based assuming the tortoises could rehabilitat the effected area in their former numbers.

#### Response 04

1. The several surveys in the project area that have been completed for the desert tortoise demonstrate that tortoise population densities in the vicinity of the project are very low. This is attributable to the marginal quality of the habitat, which in part, at least, is due to its elevation, not because of a recent decline in population. The project site is generally above 4,200 feet, whereas Category 1 habitat is generally below 4,100 feet.
2. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for additional discussion of the final FWS determination of habitat compensation.



Comment 05

1. Reclamation is also questionable. Technology doesn't exist to restore a desert habitat to its former self in any time frame that is acceptable. The funds, other than basic clean up the toxics work, should go to habitat acquisition.

Response 05

1. See Section 4.1.4.2 (Revegetation) of this Final EIS/EIR for a discussion of revegetation time frames and reclamation requirements. The reclamation required for this site is not to *restore* the wildlife habitat, but to reestablish a habitat that is useable to wildlife. Each successional stage of revegetation is valuable to wildlife.

Comment 06

1. Page 4-1 discuss (*sic*) states that other options were considered not "technically or environmentally" feasible. Economically should be added because other alternatives to protect the environment are available but would cost more.

Response 06

1. In reviewing the alternatives considered in the Draft EIS/EIR, the Supplement notes that of the alternatives evaluated "it was determined that alternatives for mining and processing technologies, locations for project facilities, water supply and power supply were not technically or environmentally feasible" (page 4-1). Economic circumstances were not considered to be determining factors for the consideration of an alternative.

Comment 07

1. We strongly disagree with the acreage amount (page 4-3) that will be affected by the project. Much more than the actual site is effected by a project of this magnitude. The surrounding natural ecosystem also is affected -- by noise, air quality, human activity, additional access, potential water pollution, etc. Saying that only 930 acres of habitat is effected is clearly in error.

Response 07

1. The Draft EIS/EIR evaluated in detail each of the potential project effects including secondary effects that occur as a result of offsite noise/air quality, traffic, and other effects. However, quantification of land receiving secondary effects (such as offsite noise) is of questionable value in evaluating wildlife impacts. It is appropriate to also discuss habitat effects in terms of direct surface disturbances.

Comment 08

1. Page C-17 discusses re-evaluating modeling prediction on the flow of Piute Spring if certain conditions are met. The project permit should stipulate that in drought years the spring has priority to the water. Also if the flow is ever affected, the project will be shut down.

Response 08

1. Comment noted. See Section 4.1.5 (Water Resources) of this Final EIS/EIR for a discussion of ground water monitoring and contingency plans.

## LETTER 4: JOANNE VINTON

Comment 01

1. I was delighted to read Appendix D, the Desert Tortoise survey. It is exciting to me that so many tortoise were found.
2. How well do we understand the tortoise? Do we know how fencing will affect their travels? Do we know how well they can survive being moved out of the project site to a new location?
3. These questions need to be answered in the Final EIS/EIR, especially now that the tortoise is listed as endangered.

Response 01

1. See Section 4.1.6 (Wildlife) of this Final EIS/EIR for a discussion of onsite tortoises. Contrary to the comment, the indicated survey in the Supplement did not locate any tortoises onsite.







**CHAPTER 5.0**  
**PREPARERS AND PERSONS CONSULTED**







## 5.0 PREPARERS AND PERSONS CONSULTED

1. This Final EIS/EIR has been prepared by Environmental Solutions, Inc. under the direction of the BLM and the County, Environmental Public Works Agency. Included below are the primary authors and those persons who provided information and assistance in preparing this report.

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2. In addition, technical advice on environmental issues was obtained from:
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- Randy Scott
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**5.2 PERSONS CONSULTED**

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**CHAPTER 6.0**  
**REFERENCES AND RESOURCES**







## 6.0 REFERENCES AND RESOURCES<sup>(1)</sup>

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(1) Indicated documents are on file and available for public review at locations listed in User's Guide of this Final EIS/EIR.



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